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MAJ. GEN. GEO. B. Mc CLELLAN, U. S. A.

Geo. B. McClellan
Maj Gen U.S.A.

THE

ARMIES OF EUROPE:

COMPRISING

DESCRIPTIONS IN DETAIL

OF THE

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MILITARY SYSTEMS OF ENGLAND, FRANCE, RUSSIA, PRUSSIA, AUSTRIA, AND SARDINIA,

Adapting their Advantages to all Arms of the United States Service:

AND EMBODYING THE

REPORT OF OBSERVATIONS IN EUROPE DURING THE CRIMEAN WAR, AS MILITARY COMMISSIONER FROM THE UNITED STATES GOVERNMENT, IN 1855–56.

Lx-e-22

BY

GEO. B. McCLELLAN,

MAJOR-GENERAL U. S. ARMY.

ORIGINALLY PUBLISHED UNDER THE DIRECTION OF THE WAR DEPARTMENT BY ORDER OF CONGRESS.

Illustrated with Several Hundred Engravings.

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PUBLISHERS' PREFACE.

THE following pages comprise the record of the observations of General McClellan, as military commissioner from the United States Government to Europe in 1855-56. He was the youngest officer of the commission, and was selected on account of the brilliant military qualities he had already displayed.

This volume opens with a masterly and interesting summary of the war in the Crimea, in which the boldness of the comments is fully warranted by their intelligence and justice: following this is a varied and detailed description of all the components of the prominent European armies, gathered from the highest authorities, at the military schools, forts, museums, camps, and garrisons of the countries which he visited. As he was at that time a captain of cavalry, this arm engages his particular attention: he has presented the fullest account yet offered of the cavalry service in Europe; and, by adaptation, a most excellent set of Regulations for the field service of the United States cavalry in time of war. These regulations are invaluable, and should be in the hands of every cavalry officer in the service.

A recapitulation of the contents would be prolix and unnecessary: a word may be said as to the present issue of the work. Written in time of profound peace,—the author being of subordinate rank, and but little known, beyond that army appreciation which he has always enjoyed,—the report appeared originally as a Government document, in an inconvenient (quarto) form, and it commanded a large price. Although adding to his reputation among military men, it never found its way to the public at large.

Those into whose hands it fell, and who were sufficiently educated in military affairs to appreciate it, at once recognized its excellence, the immense labor bestowed upon it, and the practical value of its teachings; but the facts just mentioned prevented the expectation that these would receive the reward of general praise.

Actuated by energy, enterprise, and self-respect, McClellan was true to himself and his commission, and was willing to submit his labors to time.

That time has now arrived. The country is convulsed by war; military instruction is everywhere looked for and eagerly received. The American public is educated up to the intelligent use of such books as this; and the book itself, in excellence, variety, and value, stands without a rival. The citizen soldier, whose patriotism alone takes him to the field, will here find the best precepts in his newly-adopted profession, now emanating from the lips of his own distinguished commander. To the army he always speaks with authority.

Originally an engineer officer, and serving with distinction in an engineer company during the Mexican War, McClellan has given us in this work the best directions as to engineer troops, reconnoissances and field fortifications, and entrenchments.

As a captain of cavalry, he has made that arm his special subject; and as a complete soldier, who knows that the strength of an army is its infantry, he has not neglected that corps, in observation or record. The work is indeed a full and clear description of the armies of Europe, as its new title expresses.

But chiefly is it appropriate and timely because it lays down the principles which are to guide him in his important command. It contains his own theoretic views and rules, now to be carried out in practice. It is—as it were—his own military history written, unconsciously, in advance.

His constituency is now immense; and they will watch with intense interest, while they read his war-precepts here, to see how he will carry them out in the great war in which he has such an important command.

It is due to the distinguished author to say that the republication is made at the urgent request of the publishers.

PHILADELPHIA, Oct. 3, 1861.

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McCLELLAN'S

ARMIES OF EUROPE.

THE CRIMEAN WAR.

BELIEVING that the officers of the army have a right to know the opinions formed by one of their number who enjoyed the opportunity of visiting, in an official character, the scene of the recent contest in the East, I somewhat reluctantly undertake the task of attempting to give a succinct account of those general points of the operations in the Crimea which are most important and interesting in their professional bearing.

For many and obvious reasons, no attempt will be made to enter into details. The task would be an endless one were the means at hand; and nothing but an accurate survey, or very minute and frequent examinations, of every part of the vast field on which these operations occurred, combined with the advantage of having been an eye-witness of the events themselves and the circumstances under which they took place, could justify any one in undertaking to give a detailed account of the campaign of the Crimea. It is known that circumstances rendered it impossible for the commission to reach the seat of war until a short time after the fall of the Malakoff. I have reason to expect that the other members of the commission (Col. DELAFIELD, of the Engineers, and Maj. MORDECAI, of the Ordnance) will enter into considerable detail with regard to the condition and nature of the Russian defences as they existed at the close of the siege, the amount, calibre, and effect of the artillery employed, &c.

Although fully aware that it is much easier to criticize operations after the result is known than to direct them at the time, I shall not hesitate to invite attention to what appear to be evident mistakes on either side; this, not for the purpose of finding fault, or instituting comparisons, but with the hope that it may serve to draw the attention of our officers to the same points, and, perhaps, assist in preventing similar errors on our part hereafter

From the general interest felt in the Crimean war, it is more than

probable that every officer of our army followed step by step the movements of the allies from Gallipoli to Varna, from Varna to Old Fort, and thence to the scene of the gigantic strife in the Heracleidan Chersonese.

It may seem absurd to compare small affairs with great, but it cannot fail to be a source of satisfaction to reflect upon the fact that in the operations against Vera Cruz, the first thing of that nature we had ever undertaken, we completed a difficult line of investment on the second day after landing, while the experienced troops of the allies required nearly seven days to land and march about 15 miles to the Alma; bearing in mind that they landed without knapsacks, (the English, at least,) with nothing but a scanty field material, and that they were in constant communication with their fleet. It was twenty-seven days after the battle of the Alma that they opened fire upon Sebastopol, although the distance from the Alma to Balaklava did not exceed 30 miles, and their siege train was with the fleet and landed in the secure harbors of Kamiesch and Balaklava. In spite of the delays arising from mistakes in forwarding our siege train, which was landed on an open beach, at a time when violent norther frequently suspended work and cut off all communication with the fleet, we opened fire upon Vera Cruz on the thirteenth day after landing.

Before entering upon the siege of Sebastopol, it may be well to refer to the battles which varied the monotony of that long period, during which both parties evinced so much gallantry and endurance in the usual operations of attack and defence, relieved often by the gallant sorties of the garrison on the one hand, and on the other by the desperate assaults of the besiegers. In the battle of the Alma, important chiefly because it established the *morale* of the attacking party, the allies seem to have been, judging from the statements of both sides, of about double the force of the Russians. It does not appear that the position was really a remarkably strong one, nor that it was at all improved by artificial means. The only field works were a few trifling barbette parapets in front of some of the batteries; while the slopes leading to the position seem often to have been, particularly on the Russian left, too steep to permit the effective operation of the weapons of the defenders. Of the relative gallantry of the troops composing the allied army this is no proper place to speak. It need only be said that the column conducted by General Bosquet decided the retreat of the Russians, since it turned their left flank. Of the propriety of this movement doubts may be entertained, considering always the subsequent movements of the allies. It would seem natural that two plans ought to have been considered by the allied generals: the first, to cut off the Russian army from Sebastopol, and, following the battle by a rapid advance upon the city, to enter it, at all hazards, over the bodies of its weak garrison, effect their purposes, and either retire to the fleet or hold the town; the second, to cut off the Russian army of operations from

all external succor on the part of troops coming from the direction of Simpheropol, to drive them into the city, and enter at their heels.

To accomplish the first plan, the attack of Bosquet was proper, but should have been followed up by such an unremitting pursuit as that which succeeded the battle of Jena. To gain the second object, it would have been proper to attack the Russian right, and endeavor not only to cut them off from Simpheropol, but to throw them into the sea by pushing forward the allied left so far and so rapidly as to cut them off from Sebastopol, and thus annihilate them. Neither of these plans was fully carried out. The Russians retired in perfect order, abandoning only one or two dismounted guns, thus justifying the supposition that their general appreciated much more fully than did the allies the delicate nature of his position.

It must be stated that, during the battle, the garrison of Sebastopol consisted merely of four battalions and the sailors of the fleet. The condition of its defences at that time will hereafter be alluded to.

In considering the operations of the Russians at this period, it must be remembered that the nearest harbor to the north of Sebastopol that could at all answer as a depot for the operations of a siege was the poor one of Eupatoria, forty-eight miles distant; and that to the south of the city the only harbors were Balaklava and the series between Cape Chersonese and the city. It was clearly the interest of the Russians to oblige the allies to attack on the north rather than on the south side; for the reasons that the former was already in an efficient state of defence, requiring open trenches to reduce it, while the latter was open; and more especially that their long line of communication with Eupatoria and the rear of their position would have remained exposed to the constant attacks of the reinforcements which might soon be expected by the Russians, while the city could still be supplied by the more circuitous route of the valley of Baidar, the allied force being too small to complete the investment. It was impossible for the Russians to oppose the landing; because an army on land could never keep pace with the movements of a fleet. The only reasonable plan was to remain in position at Sebastopol, and act according to circumstances as soon as the allies showed their hand. But, the landing being once effected, the Russian general should have annoyed and harassed them, by day and night, by unremitting attacks by his Cossacks and other light troops.

Instead of offering battle at the Alma, two other plans were open for the consideration of the Russian. In any event, to destroy the harbors of Balaklava, Kamiesch, &c., and then, first, to leave in Sebastopol the garrison necessary to secure it against assault by a detachment of the allied army, and with the rest of his available troops to operate on the left flank of the allies, in which case his superior knowledge of the ground ought to have enabled him at least to delay them many days in a precarious

position; second, to remain in the vicinity of the city, occupy the plateau to the south of it, and allow the allies to plunge as deeply as they chose into the *cul de sac* thus opened to them.

A couple of vessels sunk in the narrow mouth of the harbor of Balaklava, or, the employment of a few tons of powder in blasting the cliffs which enclosed its entrance, would have effectually prevented all access to it. A few vessels sunk in the common entrance of the harbors of Kamiesch and Kazatch, and the same thing at Strelitzka bay, would have rendered them also inaccessible. This should have been regarded as a necessary part of any system of defence for Sebastopol, and, if carried out, would have placed the allies in a most unenviable position. The result of their expedition would have been disastrous in the extreme; and they might well have esteemed themselves fortunate if permitted to retrace their weary journey to the Old Fort, there to re-embark and consider more promising plans of campaign. I am not acquainted with the early career of the Russian commander, but cannot resist the conviction that the history of his operations will but present another example of the impropriety of intrusting military operations to any other than a professional soldier, or at least of the danger of attempting to combine in one person any such dissimilar professions as those of the sailor and the soldier. The moral courage and energy of the admiral in the early part of the siege, and his sagacity in detecting the merits of Todtleben, are above praise, but cannot efface the impression that he failed to take a sufficiently enlarged and military view of the events he so largely controlled.

To resume the movements of the allies. The battle of the Alma was fought on the 20th of September; the two following days were spent on the field of battle; the 23d and 24th were occupied in marching a little more than ten miles to the Balbek; the 25th and half of the 26th were passed here, when, at noon of the latter day, the flank march to the south side was commenced by the curious arrangement of sending the English artillery in advance, without escort, through a woods. This very original order of march was wellnigh attended with disastrous consequences; for, as the head of the column approached the main road at Mackenzie's farm, a strong Russian column passed by. Fortunately for the English batteries, the Russians must have neglected observing the roads, and, being ignorant of the true state of affairs, steadily pursued their march towards Baktschi Serai, thus losing an opportunity of striking a brilliant blow without risk to themselves.

Finally, after darkness set in, the head of the English column reached the banks of the Tchernaya at the Traktir bridge, the rear closing up very late at night; broken down by disease, burning with thirst and exhausted by fatigue. Next day the march was resumed; losing many men by the cholera, and much disorganized by the fatigues of the pre-

ceding day, they at length reached the welcome haven of Balaklava just as an English steamer glided in. Thus, on the 27th, the communication with the fleet was regained, and the first episode of the campaign terminated. The French followed the movement, the armies ascended the plateau, Kamiesch was occupied; and now, instead of taking advantage of the exposed condition of the south side, the allies commenced the labor of landing and moving up their siege material, opening the trenches, &c.

To appreciate the position of the English army on the night it reached the Tchernaya, it must be borne in mind that it had in its rear the precipitous heights of Mackenzie, several hundred feet in elevation, with but a single road leading to the summit, and that they were thus cut off from the immediate assistance of the French. If the English had been attacked this night, the result must have been disastrous to them in the extreme. Had the harbor of Balaklava been destroyed, and the attack been made during the next day's march, it is probable that their annihilation would have been the result.

In considering this march, it is somewhat difficult to determine which party committed the greatest faults,—the allies in so exposing themselves, or the Russian in failing to avail himself of the opportunities offered.

Thus far the allied generals displayed none of the qualities of great commanders: their measures were half-way measures, slow and blundering; they failed to keep constantly in view the object of the expedition, and to press rapidly and unceasingly towards it.

From the moment the allies occupied Balaklava and Kamiesch, the conduct of the Russian general deserves high commendation, and was in striking contrast with that of his antagonists.

The affair of Balaklava has been so often discussed, yet so imperfectly explained by the innumerable military and civil inquiries to which it, and all connected with it, have been subjected, that it would seem idle for one who visited the scene nearly a year after it occurred to pretend to comment upon it; but it may be permitted to say, with regard to the ground over which the English light cavalry charged, that, if the eye were not raised from the soil under foot, no more favorable place could be selected for a charge of cavalry—it was on the smooth turf of the flat and level bottom of a wide valley; but, upon turning the glance to the ground to the north and east, imagining the Russians in the positions which they occupied on the 25th October, 1854, it is difficult to divine how any officer could direct such a charge to be made: destruction was inevitable, and nothing could be gained. No doubt there often are cases in which one arm of service may consistently be required to sacrifice itself for the benefit of the others, but this was not such a case. The most appropriate criticism upon this exhibition of insane and useless valor seems to be that, no doubt, made by a well-known French general: "C'est bien mag-

nifique, mais ce n'est pas la guerre!" The Russians have been criticized for effecting "too much and too little" in the affair of Balaklava: too much in indicating to the allies the weakness of their right; too little in not availing themselves of this weakness to carry Balaklava. It is probable that their object was chiefly to slacken the operations of the siege by making a diversion; but it does not appear that they acted with all possible energy on this occasion.

As things went at Inkermann, the result, as far as the English were concerned, appears to have been due to that steady and magnificent courage of their race, which has so often palliated or overbalanced the follies and unskilfulness of their commanders, whether in victory or defeat. Their conduct on that day was worthy of the nation which gained credit alike at Malplaquet and Landen, Blenheim and Fontenoy, Waterloo and Corunna.

The position of Inkermann is the key-point of the northeastern angle of the plateau of the Chersonese; it commands the road ascending the plateau by Cathcart's ravine, the only approach from the north side, and the road which follows the Careening Bay ravine, the only approach from the city in that vicinity; it is the most elevated ground in the neighborhood, and is susceptible of a strong defence from whatever direction it may be attacked. Were it occupied by the Russians, the siege of the Karabelnaia became impossible, and the position of the allies dangerous in the extreme; if strongly occupied by the allies, their right became perfectly secure.

Could the Russians have anticipated a siege of Sebastopol, it would have been an unpardonable error not to have occupied the Inkermann by a small permanent work. How little they were prepared for an attack by land will probably be shown in the sequel; but, as things were, it appears to be a grave error not to have intrenched the position from the beginning. It was still more inexcusable on the part of the allies to have omitted the occupation of the position in force; nor, with proper field works, would a very large force have been necessary.

The Russian plan for the battle of November 5 was most excellent in conception; and, as far as mere orders could go, nothing seemed wanting to insure success, and drive the English partly over the steep borders of the plateau into the open arms of Gortschakoff, partly into the sea, and the rest to Kamiesch. It must be kept in view that the principal object of the Russians in giving battle at the Inkermann was to prevent an assault upon the town, then regarded as too weak to resist it: in this respect, although at a heavy cost, they gained their point, for they effectually rendered an assault impossible for many months thereafter. In considering the plan of attack, the Russian general rejected the idea of a movement on the allied centre, (by the ravine of the inner harbor,)

because it was too effectually defended by the siege batteries of the allies; the attack upon their rear was rejected because the plateau was very difficult of access, strongly guarded, and the affair of Balaklava had induced the allies to throw up works in that direction. It was therefore determined to attack the English right and centre, making false attacks on the French left and towards Balaklava.

The spirit of the orders issued was as follows: General Soimonoff, with 16,200 infantry and 38 guns, to march up the Careening Bay ravine, ascend its western slope near the Victoria redoubt, and attack the English centre. General Pauloff, with 13,500 infantry and 28 guns, to march from the north side, descend into and cross the Tchernaya valley at the head of the bay, ascend by Cathcart's ravine, and attack the English right; the attack of these two commands to be simultaneous. General Gortschakoff, with about 15,000 infantry, 4,000 cavalry, and 40 guns, to make a false attack upon Balaklava and the roads leading thence to the plateau. General Timofajeff, with some 2,500 men and 4 guns, to make a false attack upon the French left, carrying their batteries, if any confusion were observed among them. The batteries in the town to keep up a warm fire.

A close examination of the ground would indicate the propriety of this plan of attack; the difficulty arose in the execution. It would appear that in the orders the expression "*left* of the Careening Bay ravine" was used for "*western*;" Soimonoff improperly interpreted this as meaning his own left, and thus brought his own and Pauloff's column into a state of confusion which paralyzed the efforts of both, so that but a portion of either command was at any one time engaged.

As it was, the Russians were undoubtedly driving the exhausted English before them when Bosquet came up. Had the false attack towards Balaklava been properly conducted, Bosquet would have been unable to assist the English; but, soon perceiving that the operations of Gortschakoff were confined to a simple cannonade at long range, he readily divined the true state of affairs, and by his prompt action saved the army.

Timofajeff succeeded in spiking fifteen guns, and paralyzed the French left.

It would thus seem that the result of the action was due partly to the courage of the English, partly to the mistake of Soimonoff, (who expiated his error with his life,) partly to the prompt and correct judgment of Bosquet, and mainly to the fact that Gortschakoff did not conduct his false attack with sufficient energy and decision.

The desperate courage of the Russians in this affair was fully acknowledged by all who participated in it.

In the battle of the Tchernaya the principal efforts of the Russians were directed against two points: the Fedukhine heights, occupied by

the French, and the hills occupied by the Sardinians, between the Fedukhine and the village of Karlofka Pus, directly opposite Tchorgoun.

A glance at the map will show the propriety of this attack; for had either of these points fallen the other must have followed; and, had the Russians followed up the occupation by any active measures, the result must have been the suspension of the siege. The question will naturally arise, why did the Russians abandon these positions, which were in their possession during a part of the preceding winter? The only reasonable answer is, that their force was then so small as to be entirely required for the defence of the city.

The Fedukhine heights, the elevation of which is not far from 100′, extend about two and a half miles along the Tchernaya; their horizontal plan is nearly a trident, with the points towards the stream, the central branch sending forth some five irregular spurs; towards the stream the slopes are sufficiently steep to render access difficult, while full sweep is permitted to the fire of artillery and musketry from the summit, and upon any one point from the collateral spurs.

The aqueduct, which is here a ditch so broad and deep as to be much in the way of troops, skirts the northern base of the heights along their whole extent.

The Traktir bridge is directly in the prolongation of the ravine which separates the central from the eastern branch of the trident; for more than half a mile on each side of the bridge the deep and vertical bed of the Tchernaya skirts the aqueduct.

The Traktir bridge was of masonry, and covered by a weak tête-de-pont.

Either the aqueduct or the stream was in itself a serious obstacle: the two combined constituted a formidable obstacle, requiring the use of bridges, situated as they were under the close fire of the troops occupying the heights.

The same difficulties, to a greater extent, existed at the foot of the Sardinian heights; but the attack in this quarter does not appear to have been quite so pronounced as that upon the French. Both of these positions were strengthened to a certain extent by field works, especially that of the Sardinians.

It is certain that the allies had received intelligence, from a neutral capital, that the Russians intended attacking on or about the 18th of August; although the precise point was not perhaps specified.

The Russian reports give their own version of the failure, attributing it to a failure on the part of one of their generals to carry out his orders; but the foregoing description of the ground may render it probable that the repulse was due to the strength of the position and the gallantry of its defenders, without seeking for other causes: it may safely be said that

the defeat of the Russians was not owing to any want of courage and impetuosity on their part.

The events of Inkermann and Traktir seem to lead to the conclusion that the Russians moved in too heavy and unwieldy masses: this system of tactics, which would on many fields, no doubt, carry all before it, if followed by a rapid deployment, in these cases exposed them to terrible losses, and rendered impossible that effective development of numerical force and individual exertion which was necessary to carry the day.

The general configuration of the harbor of Sebastopol, and the peninsula to the south of it, is too well known to require description. The most striking and, in their bearing upon the siege, the most important features are: First:—The complete isolation of the high plateau of the peninsula from the main Crimea by the nearly continuous valleys of Balaklava and the Tchernaya. Second:—The lofty and almost inaccessible escarpment which limits the plateau towards the east, south, and to a great extent on the north. Third:—The deep and difficult ravines which intersect this very irregular surface.

Some points of the plateau exceed 700′ in elevation; the average height of the escarpment above the valleys of Balaklava and the Tchernaya may safely be taken at 400′. It need scarcely be stated that this plateau formed for the allies a position of great strength.

Of the many ravines by which it is intersected, it is only those from the Careening to the Quarantine bays, inclusive, that have an immediate bearing on the works of attack and defence. All of these have their origin quite close to the eastern border of the plateau.

The most important is the great central ravine, the main branch of which commences quite near the "Col de Balaklava,"—the depression through which the main road from Balaklava to Kamiesch ascends the plateau,—then runs a little west of north, forming, where it enters the town, the inner harbor, which separates Sebastopol from the Karabelnaia suburb. During nearly the first half of the siege the French approaches were confined to the west of this ravine, occupying all the space thence to the sea; while the English were on the east, occupying the ground only as far as the Otchakoff ravine: in other words, the original French attack was directed against the city proper, while that of the English was against a portion of the Karabelnaia suburb.

It is now time to state that when the allies reached Balaklava the land defences of Sebastopol, on the south side, consisted of a loop-holed wall, 4′ 8″ thick, and from 18′ to 20′ high, extending from the western point of Artillery bay to the position afterwards occupied by the Central Bastion; thence around the Karabelnaia suburb to the main harbor the only defence consisted of the Malakoff tower, a semicircular structure, with two stories of loop-holes and 5 guns in barbette.

To resume the description of the ground west of the central ravine: the Artillery Bay ravine commences about three-quarters of a mile outside of the city, and at first runs nearly north, being separated from a spur of the central ravine by a ridge about one-eighth of a mile wide; on the highest point of this ridge was situated the Flag-staff Bastion, (Bastion du Mât;) the French approaches followed this ridge, and extended across the Artillery Bay ravine, which is here by no means steep or difficult, but becomes much more pronounced upon entering the city, when it for some distance runs off to the west of north.

Just before this ravine enters the city there commences to the west of it, and separated from it by a ridge about one-eighth of a mile wide, another ravine, which runs into the Quarantine bay, and which we will call the Central Bastion ravine; the direction of this ravine is nearly northwest; near its head, and on the highest point of the ridge which separates it from the Artillery Bay ravine, is situated the Central Bastion, at an elevation of 217′ above the sea.

The loop-holed wall, and the works constructed to replace or strengthen it, follow this ridge for about three-quarters of the distance to the Quarantine batteries, and then turn off to the north; from this angle to the batteries a line of works called the Quarantine redans was erected during the siege.

The French attacks against the Central Bastion followed the ridge on which it was built, and to the westward occupied the irregular ridge between the Central Bastion ravine and the Quarantine Bay ravine, then crossed this last ravine and terminated at the shore of the Black Sea, where powerful batteries were erected. The Central Bastion ravine has rather gentle slopes, and is by no means so difficult as those on the eastern side of the great central ravine: in fact, approaches could be carried over it, and did, indeed, extend into it.

Passing to the east of the central ravine, Cathcart's hill, which will be found on all the maps, may be taken as a starting-point.

On the west and east sides of this hill two difficult ravines commence: the first, called by the English *the Valley of Death*, unites with the central ravine about one mile from the southern extremity of the inner harbor; the second, by which the Woronzoff road enters the city, joins the central ravine at the very end of the inner harbor. The isolated spur thus formed was occupied by the English left attack, the only object of which was to establish batteries to assist the French attack upon the Flag-staff Bastion, and the English right attack upon the Redan, as well as to protect the flanks of those attacks; for the ravines bordering this spur are so deep and difficult as to render it impossible to cross them either by trenches or assaulting columns.

Farther to the east is the Otchakoff ravine, running nearly parallel to

the Woronzoff ravine, much less difficult, and directed upon the Dock Yard bay. On the highest point of the ridge separating the two ravines last named, and at its end nearest the town, were situated the Redan and the Barrack battery; the English right attack followed the ridge. To the eastward of the Otchakoff ravine, and nearly parallel to it, is the Carcening Bay ravine, the most difficult of all. On the highest point at the end of the ridge thus formed was placed the Malakoff, at an elevation of 333′; the Little Redan (Batterie Noire) occupied a considerably lower point to the northeast of the Malakoff, while the work known as the Mamelon Vert, or Brançion redoubt, crowned a hill on the same ridge, about three-eighths of a mile to the southeast of the Malakoff, and 40′ more elevated; the French attacks against the three works named occupied the summit and higher slopes of the ridge.

Between the Careening Bay ravine and the main harbor is situated the high and narrow ridge known as Mount Sapoune. Points of this ridge were occupied by the Volhynia and Selenghinsk redoubts, (*ouvrages blancs,*) which acted upon the flank of the French approaches against the Mamelon, and would have taken in reverse the approaches thence against the Malakoff. The French approaches against the redoubts wound along the summit of the Sapoune ridge. In rear of the Redan and Malakoff, more especially in the latter case, the ground fell rapidly to the level of the Karabelnaia and the bay; in rear of the loop-holed wall the ground also soon fell rapidly into the Artillery Bay ravine, leaving, however, a plateau of some little width immediately behind the defences, which thus screened the greater part of the town and harbor from the view of those in the trenches.

From the course known to have been pursued by the Russians in other cases, the nature of the ground, the appearance of the works at the close of the siege, and the remarks of officers on both sides, it would appear that when Todtleben was called upon to fortify Sebastopol, in presence of the enemy, he commenced by occupying most of the important points that have been mentioned by detached works, generally closed at the gorge. The first efforts of the garrison were directed towards giving these sufficient strength to resist assault; afterwards they were connected by re-entering lines of a weaker profile, which served to enfilade the ravines and flank the main works. These lines were generally, but not always, continuous.

One of the early measures was to construct rifle-pits, which were often advanced to a very considerable distance.

The most important points of the main line of defence should probably be classed in the following order of strength: 1st. The Flag-staff Bastion; 2d. Central Bastion; 3d. Malakoff; 4th. Redan; 5th. Little Redan.

The Flag-staff Bastion was, on account of the ground, a somewhat irregular figure,—nearly a lunette. The ditch of the right face was flanked by two guns in a blinded caponière; the left face was flanked by four guns, in a return of the epaulment which extended from the rear of the work along the crest of the central ravine, and finally down to the bottom of the valley. The command of the work could not have varied much from 15′. The ditch was about 30′ wide, and from 12′ to 15′ deep; its slopes steep, often vertical. Against a portion of the scarp, near the salient, rested a row of palisades some 10′ high, and uninjured by the fire. This was the only case of palisading observed in any part of the ditches. The work was provided with a glacis and covered way, the interior slope of the latter revetted with gabions. Shelters were excavated in the counterscarp, under the covered way. There was a small battery in the covered way of the left face. It was in front of this bastion that the principal mining operations were conducted: on the part of the French to advance their approaches, on the part of the Russians to frustrate the attempt. The craters were from 12′ to 15′ in depth, and in a very rocky soil. The French never succeeded in carrying the work, nor in crowning the crest of the glacis.

Some portions of the exterior slope were revetted with gabions. These were sadly disfigured, but still presented a formidable obstacle. It is most probable that this system was resorted to only as a rapid means of repairing damages.

The guns were mounted on a narrow rampart, with traverses for each gun, and parados on the right face. Here, as well as in all the other land defences, ships' guns mounted on ships' carriages, and worked by side tackle and breechings, were alone employed. In this battery many of the embrasures were revetted with the common boiler-iron ships' water-tanks, cubes 4′ on each edge. These were filled with earth, and three were employed to revet each cheek. In one embrasure thirteen shot and shell had struck a cheek thus revetted, yet the embrasure was perfectly serviceable. In some cases traverses were made of these tanks. Their sides were sometimes used instead of the rope mantelets. The rope mantelets were suspended from a horizontal spar laid across the top of the embrasure and lashed to stout stakes: they were 4″ thick, and made of three thicknesses of rope sewed together. A hole was left in the lower part for the gun to run through, and often a circle of similar construction was placed upon the gun, a small aperture being left for pointing. This arrangement was rendered indispensable by the great depth of embrasure required for ships' carriages, and was found to afford ample protection against rifle-balls and small grape.

The bomb-proofs were generally ample in number; they were sometimes under the rampart, sometimes under the second line of defence, (where

such a line existed,) often under special traverses, and occasionally entirely under ground. Their height was generally 6′ and upwards, the width sufficient for two rows of banquette beds; the length varied exceedingly; the roof was generally composed of 18″ timber, for the most part pieces of masts; the minimum depth of earth on top seemed to be 6′. As I observed none which were broken in by shells, it may be a fair inference that this depth was sufficient.

Many of the bomb-proofs were lined with boards, had fireplaces and chimneys, were well ventilated, and whitewashed. Latrines were arranged in special bomb-proofs, movable casks with seats over them being employed.

The Flag-staff Bastion had a second line of defence, which was filled with bomb-proofs.

The Central was similar in construction to, yet weaker in profile than, the Flag-staff Bastion; its steep scarp and counterscarp rendered it, indeed, a formidable obstacle to assault. With such defenders as the Russians, it is no discredit to the French that their patient yet brilliant efforts failed to achieve success. The loop-holed wall was either covered by a rampart and parapet, or entirely replaced by a simple parapet; wherever it remained exposed it was much injured by the long cannonade to which it was subjected.

The Quarantine Redans were little more than a simple trench, with the gabionade thrown forward about 3′, thus affording a banquette; the soil in this part was even more rocky than in front of the bastions just described.

The strength of profile of the works east of the central ravine was very much less than that of the Flag-staff and Central Bastions. The remembrance of the history of the progress of the siege will explain the seeming anomaly that points, now generally considered of secondary importance, should be more strongly fortified than those which common opinion pronounces the key-points of the position. Until the spring of 1855, all the efforts of the French were directed against the Flag-staff and Central Bastions; and for some reason or other (probably the languor with which their approaches were pushed) the Russians seemed to attach very little importance to the operations of the English. It was therefore natural and proper that the Russians should avail themselves of the time employed by the allies in preparing to open their fire, and of the slackness of the fire during the winter, to turn all their efforts upon the points attacked. It is probable that serious work upon the Malakoff scarcely commenced before the French opened their trenches against it: it was therefore carried on under much more unfavorable circumstances.

In the leisurely construction of a system of permanent defences for Sebastopol, the neglect of the Malakoff and Sapoune ridges would have been indeed inexcusable; but the actual works were constructed for the

most part under fire, and always in sight of the enemy. The garrison was for a long time weak for so extensive a position, and the supply of tools was always inadequate in amount and wretched in quality: looking at their miserable tools, it was a source of astonishment that such gigantic results could have been achieved with such paltry means.

The Redan was more properly a salient bastion, and appearances indicated that it was originally a detached lunette, *closed at the gorge* by a bastioned front, having a good ditch, banquette, &c.; in fact, this gorge front still existed in fair condition at the close of the siege, the left half bastion alone having, for some reason, been nearly levelled. The Redan was afterwards connected with the Barrack battery on the one hand, and on the other extended by the line of works crowning the western crest of the Otchakoff ravine. The nature of the ground, especially near the salient, was such that the scarp and counterscarp were more gentle than in the bastions already described. Without pretending to enter into details which would necessarily be imperfect, the best practical idea of the real nature of the work will be derived from the fact that, although no breach was made, the English, on the 8th September, entered the work without using the ladders. The details of the interior were similar to those of the Flag-staff Bastion, the guns being covered by traverses and parados, which formed shelters very favorable to an attacking column after it had once effected an entrance. It should be distinctly stated that the Redan had no second line of defence.

In front the ground has a very gentle slope and is unobstructed; the works connecting the Redan with the Barrack battery border the precipitous side of the great ravine; the ground occupied by the work itself slopes gently from the salient towards the gorge; in rear it falls rapidly towards the inner harbor, but somewhat less so to the north, so that access is not very difficult from that direction.

In the immediate vicinity of the Redan there was a series of remarkable bomb-proofs, excavated in the solid rock: first, a ditch 12′ wide and 4′ deep was excavated; then holes for a couple of men each were formed on each side of the ditch, each hole being 6′ long, 5′ high, and 3′ wide.

In the same locality arrangements were observed for firing canister from a 13″ mortar.

The line of works extending from the Redan along the crest of the Otchakoff ravine varied much at different points; in some places the ditch was excavated to the depth of 6′ and 8′ in the rock, in others the counterscarp was wholly artificial; portions of the abatis still remained in front of this line. This line did not extend continuously to the Malakoff, but was broken where it crossed the Otchakoff ravine, detached retired batteries enfilading the latter.

The Malakoff also was a salient bastion, its right face being slightly

broken to the front; the bastion enclosed the remains of the tower, the lower story of which was covered by the parapet.

An ample estimate for the profile of the Malakoff at the salient would probably be, command 14′; thickness of parapet, 18′; ditch, 18′ wide and 12′ deep. At all events, such was the condition of affairs that the Zouaves, who formed the storming party on the 8th September, entered the work without the aid of ladders.

The Malakoff Bastion (called by the Russians Korniloff, the name Malakoff being applied by them only to the tower) occupied the eastern crest of a hill rising from the general surface of the ridge, and terminating it towards the town; the slope of the hill towards the French approaches was gentle, while towards the Karabelnaia suburb it was steep, difficult, and obstructed in the extreme; to the north and south the ground fell away rapidly. In rear of the bastion an irregular redoubt occupied the remainder of the summit of the hill; the parapet did not always follow the ditch, but was often broken into saw-teeth (to obtain better directions for the guns) while the ditch ran in a straight line. With regard to the bastion and redoubt two errors were committed: in the first place, two epaulments were left standing, extending from near the flanks of the bastion to the redoubt, which afforded easy access to the latter from the parapet of the former; in the second place, the bastion was literally filled with traverses covering the bomb-proof shelters; these traverses entirely nullified the effect of the fire of the redoubt upon the troops who gained the bastion, and afforded them complete shelter. As these bomb-proofs were absolutely necessary to enable the garrison to hold the work during the bombardment, it is not perhaps exactly proper to designate their construction as an error, although their existence proved fatal at the time of the assault. The evil might have been remedied either by sinking the bomb-proofs entirely under ground, or by giving to the mass of earth above a glacis slope towards the salient; although the latter arrangement would have required much space. The interior slopes of all the works were revetted with gabions, crowned with fascines and sand-bags. From the Malakoff to the Little Redan abatis, military pits, spikes, and caltrops with four barbed points, stuck through planks, were freely employed. These things were also employed in front of other parts of the defences. Explosive machines, on the Jacobi principle, were also employed.

The Russian engineers appeared to have relied upon the artillery fire of the collateral works for flanking defences and acting upon the ground in front of any particular work, rather than upon the immediate flanking arrangements of the special work in question. The entire absence of blinded batteries is somewhat remarkable. There can be no doubt that such batteries at the salients of the principal works would have exercised a very great influence.

The Mamelon Vert was situated on the summit of a mound of no considerable elevation above the general surface of the ridge; the eastern slope was gentle, while it was more abrupt on the other sides, particularly towards the west. It was difficult or impossible to determine the original form of the work. It appeared to have been a redan, with a pan-coupé, the right face flanked by the Malakoff, the left by the Little Redan, the pan-coupé by the Sapoune redoubts; yet it is not improbable that it was a lunette. The Sapoune redoubts appear to have been lunettes, with a command of 7′, the ditch 5′ deep and 12′ wide, a glacis 2′ in height. Even in these detached works excellent bomb-proofs were provided.

The Russian counter-approaches generally consisted of flêches, united by a simple trench.

The famous rifle-pits varied much in character. Sometimes they consisted merely of a little pile of stones, or two gabions, placed on their sides, forming an angle merely sufficient to shelter one man; at other times, of a hole in the ground for four or five men; again, of semicircles or flêches capable of holding from ten to forty men.

In front of the Volhynian redoubt there were two lines of these semicircular shelters, uniting at an acute angle about two hundred and fifty yards in advance of the work, and extending across the ridge. In advance of the angle were two rows of small ones for one or two men each. These particular semicircles were eight paces wide at the gorge, had a parapet 4′ high, the interior being excavated. In many cases these pits were thrown much farther in advance, and in very exposed situations. They contributed very materially towards impeding the progress of the approaches.

From the preceding hasty and imperfect account of the defences of Sebastopol, it will appear how little foundation there was for the generally received accounts of the stupendous dimensions of the works, and of new systems of fortifications brought into play. The plain truth is that these defences were simple temporary fortifications of rather greater dimensions than usual, and that not a single new principle of engineering was there developed. It is true that there were several novel minor details, such as the rope mantelets, the use of the iron tanks, &c.; but the whole merit consisted in the admirable adaptation of well-known principles to the peculiar locality and circumstances of the case. Neither can it be asserted that the plans of the various works were perfect. On the contrary, there is no impropriety in believing that, if Todtleben were called upon to do the same work over again, he would probably introduce better close-flanking arrangements.

These remarks are not intended to, nor can they, detract from the reputation of the Russian engineer. His labors and their results will be handed down in history as the most triumphant and enduring monument

of the value of fortifications, and his name must ever be placed in the first rank of military engineers. But, in our admiration of the talent and energy of the engineer, it must not be forgotten that the inert masses which he raised would have been useless without the skilful artillery and heroic infantry who defended them. Much stronger places than Sebastopol have often fallen under far less obstinate and well-combined attacks than that to which it was subjected. There can be no danger in expressing the conviction that the siege of Sebastopol called forth the most magnificent defence of fortifications that has ever yet occurred.

This would seem to be the proper place to notice a popular fallacy which, for a time at least, gained extensive credence. It was, that the siege of Sebastopol proved the superiority of temporary (earthen) fortifications over those of a permanent nature. It is easy to show that it proved nothing of the kind, but that it only proved that temporary works in the hands of a brave and skilful garrison are susceptible of a longer defence than was generally supposed. They were attacked as field works never were before, and were defended as field works never had been defended. The main difference between properly-constructed permanent fortifications (intended to resist a siege) and temporary works is, that the latter seldom present an insuperable obstacle against assault, while the former always do. In addition, permanent works have a better command over the adjacent country, and are more carefully and perfectly planned. The masonry walls, which render an assault impossible, cannot be seen from the distance, and can be destroyed only by establishing batteries on the crest of the glacis or the edge of the ditch; the earthen parapets alone being visible beyond that point, they may, until the besiegers arrive there, be regarded in the same light as field works, with the difference that the garrison are not harassed by the necessity of being constantly prepared to repel an assault. Now, in the siege of Sebastopol, the trenches of the besiegers never reached the edge of the ditch; so that, had the fortification been a permanent one, the most difficult, slow, and dangerous part of the siege remained to be undertaken, viz.:—the crowning of the covered way, the establishment of the breach batteries, the descent and passage of the ditch, and the assault of the breach: in other words, at the moment when the weakness of the temporary works became apparent and fatal, the true strength of the permanent defences would have commenced coming into play.

Assuming the progress of the attack to have been as rapid as it was under existing circumstances, the besiegers, on the 8th of September, would not yet have been in a condition to crown the covered way, the siege would certainly have extended into the winter; and it may even be doubted whether the place would eventually have fallen, until the allies were in sufficient force to invest the north as well as the south side.

From the fleet and the naval arsenals were undoubtedly derived the means of arming and equipping the land defences; on many occasions the fire of the vessels up the ravines, as well as their vertical fire, was probably attended with effect: yet I can see no reason to coincide in the opinion that the presence of the fleet justified the allies in failing to advance upon the town immediately after their arrival in front of it. No doubt the fire of the vessels would have rendered it impossible for the allies to have occupied immediately the lower parts of the town and the shores of the harbor; but the nature of the ground was such that they could have opposed no serious resistance to the allied occupation of the positions subsequently occupied by the Malakoff, Redan, and Flag-staff Bastion. Once holding these points, it would have been easy for the allies to establish batteries commanding at once the fleet and the town; defence would have been impossible, and the opening of their fire must have been the signal alike for the destruction of the fleet and the evacuation of the south side.

We will now pass to the works of attack.

So great was their extent, some 6 miles from the extreme right to the farthest left, with a development that has been stated, probably without exaggeration, to exceed 40 miles, and so broken was the ground over which they stretched, that it is impossible to give in a report like this any thing approaching to a definite idea of their plan. An endeavor will be made merely to point out how far the besiegers departed from, or conformed to, their established systems for works of this nature.

As the selection of the points of attack, and the positions to be occupied to cover the siege, must first have engaged the attention of the allied commanders, they will naturally be the first objects for our consideration.

In the determination of the position for covering the siege there were two things to be considered: 1st, the power of resisting the efforts of a relieving army; 2d, the facility of bringing up to the front the various supplies required in the operations.

The strength of the position afforded by the plateau of the Chersonese has already been referred to; with the small force at first present on the part of the allies, it is certain that their position would have been much stronger and more secure had they confined themselves to the occupation of the plateau, holding the valleys to the east only by detachments to observe the enemy. The English, supposing that their position and point of attack remained as it was, would have had a somewhat greater distance to pass over in the transportation of their supplies; but by abandoning Balaklava for Kazatch they would have obtained a much more extensive and convenient harbor, and the united efforts of the two armies would have enabled them to construct, in ample season, a good

road for the passage of their trains. Had the siege been undertaken by a French army alone, it can scarcely be doubted that Kamiesch and Kazatch would have been used to the exclusion of Balaklava; at all events, Balaklava would have been employed only as a temporary depot, when the roads were good and the enemy at a distance: here the insuperable evils of a divided command probably intervened. In this case the barren and disastrous day of Balaklava would never have occurred; the force and labor employed in protecting Balaklava would have placed the position of Inkermann in such a state of defence as either to have deterred the Russians from engaging in the battle, or to have secured the victory to the allies without the frightful cost and great uncertainty attending that eventful contest.

In the actual condition of affairs, if either on the 25th October or the 5th November the Russians had succeeded in carrying Balaklava, the English army would have been reduced to the most desperate extremity by the total loss of all its supplies and means of transportation. It is possible that the result would have been the total abandonment of the siege, and a retreat upon Kamiesch, to embark there as rapidly as transportation could be obtained.

To anticipate objections, it may be stated that, during the winter of 1854 and 1855, no supplies were drawn from the country beyond Balaklava, and that the only advantages derived from its occupation were:—inextricable confusion in unloading vessels and despatching supplies, arising from the want of size of the harbor, and the steepness of its banks; wretched roads over the muddy soil; a steep ascent to be overcome in reaching the plateau; finally, the constant and lively anticipation of being entirely deprived of these uncertain advantages upon the first resolute attack by the enemy in force. The most probable reasons for the selection of Balaklava as the English depot are, that it was somewhat nearer the position on the plateau; that it was not taken by the French; and that, since it existed, it would be a pity that it should remain idle.

We may now turn to the point of attack.

The facts of the case are well known. For many months the operations of the French were directed entirely against the Flag-staff and Central Bastions, the English being engaged in what may be termed two false attacks against the Redan.

It was not until the spring of 1855 that the efforts of the French were at last turned towards securing possession of the Malakoff.

To appreciate the merits of this question, it is necessary again to refer to the map, to bear in mind that the heights overlooking the Karabelnaia were considerably more elevated than those bordering upon the main city, and that the docks and other naval, as well as military, establishments were all located in the Karabelnaia suburb.

Were the Flag-staff Bastion carried, but a single step was gained; beyond it existed at least two lines of defence, both difficult to carry, before even the main city was reached. While these new approaches were being constructed, it would have been a simple matter for the Russians to border the commanding heights of the Karabelnaia with new batteries directed against the town; the fire from these, together with that from the works on the north side, would have rendered the victors very uncomfortable and insecure in their barren conquest; and the fleet could have retired to the vicinity of the Careening bay, where it, as well as the docks, would have been secure against direct injury.

By taking the Malakoff, the fleet and the establishments of the Russians lay exposed at the feet of the allies; its commanding position and proximity to the main harbor rendered further resistance useless when once occupied by them. Considerations relating to the facility of bringing up supplies and covering their depot very probably determined the direction of the early French attacks, but by no means diminish the credit due to General Neil, who first turned the efforts of his countrymen in the right direction.

If a deficiency in men and means is assigned as a reason for the early operations of the allies, it is but another proof that, in undertaking the affair, they neglected one of the clearest rules of war; that is, to undertake no important operation without full and reliable information as to the obstacles to be overcome, and the means of resistance in the hands of the enemy.

Enough has already been said to justify the belief that a dilemma, difficult of solution, might be presented for the consideration of the allies: on the one hand, the comparatively small scale upon which the original expedition was organized,—the intimation contained in some of the French instructions that "half a siege train" would suffice to capture Sebastopol, and the absence of all preparations for passing the winter in the Crimea, would indicate that the allied governments were well aware of the real weakness of Sebastopol at that time, and intended that it should be carried by a "coup de vigeur;" on the other hand, from the moment the armies landed, every movement was conducted in a manner indicating that the generals were under the impression that formidable defences were in front of them, and that nothing serious could be attempted until further supplies and reinforcements were received.

In regard to the detailed execution of the French attacks, little or nothing novel is to be observed. Even when coolly examining the direction of their trenches, after the close of the siege, it was very rarely that a faulty direction could be detected: they always afforded excellent cover, and were well defiladed; in some cases the excavation of the double direct sap was carried to the depth of 6½′ in the solid rock.

The execution of many of the saps and batteries was worthy of a school of practice. In the parallels, bomb-proofs were provided as temporary hospitals, offices for the generals on duty, &c. They did not use the sapper armor. The use of the sap roller was often attempted, but it could be employed only during the latter part of the attack upon the Malakoff, when the fire of the Russian artillery was nearly extinguished by the mortars; before that, as soon as a sap roller was placed in position some 30 guns would be brought to bear upon it, the result being its immediate destruction.

It may justly be said of the French approaches, that they admirably carried into practice their system of sapping. The technical skill and patient courage evinced by their officers and men in pushing forward such excellent approaches, under a most deadly fire, is worthy of all commendation, and is such as might have been expected from the antecedents of their corps of engineers. With regard to the English the case was different: it seemed as if they systematically abandoned the excellent system taught and perfected with so much care at Chatham.

Whenever the ground was difficult, their trenches generally ceased to afford shelter; a shallow excavation in the rock, and a few stones thrown up in front, appeared to be all that was considered necessary in such cases. They were often faulty in direction as well as in profile, being not unfrequently badly defiladed, or not gaining ground enough, and entirely too cramped; nor were they pushed as close to the Redan as they ought to have been before giving the assault.

In too many cases the expression "tâtonnement" of the French would seem to convey the best idea of their operations. Their batteries, however, were very well constructed. Their magazines, platforms, &c., were usually similar to those adopted at Chatham, although unnecessary deviations were sometimes complained of.

They employed neither armor nor the full sap; sometimes the half-full, but generally the flying sap were employed. The excellent English magazines were generally covered with 7″ or 8″ timber, 2 layers of fascines, 2 layers of sand-bags, and 5′ or 6′ of earth. During the siege three were exploded by 13″ shells; but it was supposed that in two of these cases the shells burst in the passage, as similar magazines resisted 13″ shells falling on the roof; in the third case the magazine was first struck fairly on the roof by a 13″ shell, which laid it bare to the sand-bags; the corporal of sappers in charge, being intoxicated, neglected to repair the damage, when another 13″ shell struck in the same place and exploded the magazine.

A very good gabion was made, by the English, of the iron hoops of bales of hay, casks, &c. They were 3′ high and 2′ in diameter, having 11 stakes of sawed wood. The iron hoops were wattled as the ordinary

withes, and were bound by iron straps running the whole length of the gabion. These were much employed in revetting the cheeks of embrasures, thus avoiding the use of raw hides. The first pair of gabions, at the throat, should not be of iron, since it was found that shot would often tear off pieces of the straps, which caused bad wounds.

Gabions were also made of split hoops.

The fascines were bound with iron straps, twisted by pincers, in addition to the ordinary withes. The dimensions of their materials varied much in size, being made by different parties.

Sand-bags were very much employed in revetting batteries, traverses, &c.

Latrines were provided at the extremities of parallels and boyaux, and cleansed with lime every day.

Water tanks and reservoirs were provided in the parallels, and filled every morning and evening by means of pack-animals.

During the siege the English working parties and guards of the trenches generally paraded at 6½ P.M., and moved off after dark, often suffering severely before reaching the trenches. The guards of the trenches went on duty in their red coats and forage caps, without knapsacks; working parties in working dress, and armed; muskets on the reverse of the trench. Generally double sentinels were posted, on their bellies, about 50 yards in advance of the trench.

Materials, guns, ammunition, &c., were carried up at night, "over the open."

The result of the operations of this long and eventful siege was that on the 8th of September, 1855, the French had, at a great cost of life and labor, pushed their approaches to the distance of 32 paces from the counterscarp of the Malakoff, and not quite so near the other works. The English, meanwhile, had scarcely reached within 225 yards of the ditch of the Redan.

On that day the assault was made at noon upon at least six points.

A few minutes later than the assault upon the Malakoff, the English attacked the Redan. The Russians being now upon the alert, they did not pass over the open space before them without loss; but the mass succeeded in crossing the ditch and gaining the salient of the work. Finding themselves entirely unsupported, they at once took shelter behind the traverses, whence the example and efforts of their officers did not avail to draw them, in order to occupy the work closing the gorge. Having in vain used every effort, having despatched every officer of his staff to the rear urging that supports should be at once sent up, and seeing that the Russians were now beginning to assemble in force, the commander of the English storming party reluctantly determined to proceed himself to obtain reinforcements. Scarcely had he reached the trenches,

and at last obtained authority to move up the required succor, when, upon turning to lead them forward, he saw the party he had left in the work rapidly and hopelessly driven out at the point of the bayonet. No further effort was made to carry the work. It would, in all probability, have failed, and would only have caused a useless sacrifice of men.

The failure of the English assault may be attributed partly to the fact that their advanced trenches were too small to accommodate the requisite force without confusion, in part to their not being pushed sufficiently near the Redan, but chiefly to that total absence of conduct and skill in the arrangements for the assault which left the storming party entirely without support. Had it been followed at once by strong reinforcements, it is almost certain that the English would have retained possession of the work.

The two French attacks on the west of the central ravine were probably intended only as feints: at all events, the parties engaged were soon driven back to their trenches with considerable loss, and effected nothing. Their attempts upon the Little Redan, and the works connecting it with the Malakoff, met with even less success than the English assault. The Russians repulsed the French with great loss, meeting with the bayonet the more adventurous men who reached the parapet. Thus, in five points out of six, the defenders were fully victorious, but, unfortunately for them, the sixth was the decisive point.

In their admirable arrangements for the attack of the Malakoff, the French counted on two things for success:—first, they had ascertained that the Russians were in the habit of relieving the guard of the Malakoff at noon, and that a great part of the old guard marched out before the new one arrived, in order to avoid the loss which would arise from crowding the work with men; in the second place, it was determined to keep up a most violent vertical fire until the very moment of the assault, thus driving the Russians into the bomb-proofs, and enabling the storming party to enter the work with but little opposition. The hour of noon was therefore selected for the assault, and the strong columns intended for the work were at an early hour assembled in the advanced trenches, all in admirable order, and furnished with precise instructions.

The mortars maintained an unremitting fire until the moment appointed. The very instant the last volley was discharged, the storming party of Zouaves rushed over the thirty paces before them, and were in the work before the astonished Russians knew what had happened. It was stated that this party lost but eleven men in entering the work. Other troops advanced rapidly to the support of the storming party, a bridge was formed by rolling up five ladders with planks lashed to them, a communication was at once commenced between the advanced trench and the bridge, brigade after brigade passed over, the redoubt was at once occupied by the

storming party, and thus the Malakoff, and with it Sebastopol, was won. The few Russians remaining in the work made a desperate resistance. Many gallant attempts were made by Russian columns to ascend the steep slope in rear and regain the lost work; but the road was narrow, difficult, and obstructed, the position strong, and the French in force. All their furious efforts were in vain, and the Malakoff remained in the possession of those who had so gallantly and skilfully won it. With regard to the final retreat to the north side, it can only be said that a personal examination of the locality merely confirms its necessity, and the impression so generally entertained that it was the finest operation of the war: so admirably was it carried out that not a straggler remained behind; a few men so severely wounded as to be unfit for rough and hurried transportation were the sole ghastly human trophies that remained to the allies.

The retreat, being a more difficult operation than the assault, may be worthy of higher admiration; but the Russian retreat to the north side and the French assault upon the Malakoff must each be regarded as a masterpiece of its kind, deserving the closest study. It is difficult to imagine what point in either can be criticized; for both evinced consummate skill, discipline, coolness, and courage. With regard to the artillery, I would merely remark that the Russian guns were not of unusual calibre, consisting chiefly of 24, 32, and 42 pounders, and that the termination of the siege was mainly due to the extensive use of mortars finally resorted to by the allies. If they had been employed in the beginning as the main reliance, the siege would have been of shorter duration.

The causes of the unusual duration of this siege naturally resolve themselves into three classes: the skilful disposition of the Russians, the faults of the allies, and natural causes beyond the control of either party. Among the latter may be mentioned the natural strength of the position and the severity of the winter. In the first class, there may be alluded to:—the skill with which the Russian engineers availed themselves of the nature of the ground; the moral courage which induced them to undertake the defence of an open town with a weak garrison; the constant use they made of sorties, among which may properly be classed the battles of Balaklava, Inkermann, and the Tchernaya; the ready ingenuity with which they availed themselves of the resources derived from the fleet; the fine practice of their artillery; their just appreciation of the true use of field works, and the admirable courage they always evinced in standing to their works to repel assaults at the point of the bayonet; the employment of rifle-pits on an extensive scale; finally, the constant reinforcements which they soon commenced receiving, and which enabled them to fill the gaps made in their ranks by disease and the projectiles of the allies.

The evidences of skill on the part of the allies, as well as the apparent

faults on all sides, having been already alluded to, it is believed that the means have been furnished to enable any one to draw his own conclusions as to the history of this memorable passage of arms.

At different times during the siege a vast amount of labor was bestowed upon field works in front of Kamiesch and Balaklava, near the Inkermann, on the northern and eastern borders of the plateau, and along the Tchernaya: these works varied much in strength and character, sometimes consisting of continuous lines, again of detached redoubts.

The redoubts generally had ditches about 10′ wide and 6′ deep. In many cases these works were only undertaken when a narrow escape from some imminent danger had demonstrated their necessity.

The line in front of Kamiesch consisted of eight pentagonal redoubts, connected by an infantry parapet; it ran from Strelitzka bay nearly south to the sea, passing at a little more than a mile from the harbor of Kamiesch: it was never completely finished.

The position of the Russians, after the evacuation of the south side, was one of exceeding strength: their establishments were covered by Fort Sivernaia, (a permanent work,) and long lines of strong earthen batteries, which would have required a siege to reduce them.

The steep declivity of Mackenzie's heights, accessible at but a few points, all of which were strongly guarded, rendered the approach from the south a matter of extreme difficulty. It would appear that the allies were wise in refusing to attempt to force the passage, unless the effort had been made immediately after the fall of the Malakoff, before the Russians recovered from the shock.

Efforts were made to turn the extreme Russian left by the valley of Baidar, but they only served to ascertain the hopelessness of the undertaking.

The detached operations against Kinburn, Eupatoria, Kertch, the Sea of Azoff, &c., cannot be regarded as having produced any effect upon the general result of the war: they served chiefly to weaken the main body of the allies, to annoy and exasperate the Russians, to occupy the attention of some of their irregular troops, and to destroy more private than public property.

The most accurate topographical map of the ground around Sebastopol, that I have seen, is one published at the hydrographic office of the Admiralty, February 2, 1856, and entitled, "Sebastopol: showing the Russian defence works and the approaches of the allied armies; by Lieutenant George R. Wilkinson, R.N., under the direction of Captain T. Spratt, R.N. C.B., September 1, 1855."

The permanent defences of the harbor of Sebastopol against an attack by water, although inferior in material and the details of construction to our own most recent works, proved fully equal to the purpose for which

they were intended. Indeed, the occurrences on the Pacific, the Baltic, and the Black Sea, all seem to establish, beyond controversy, the soundness of the view so long entertained by all intelligent military men, that well-constructed fortifications must always prove more than a match for the strongest fleets.

It is believed that a calm consideration of the events so hastily and imperfectly narrated in the preceding pages must lead all unprejudiced persons among our countrymen to a firm conviction on two vital points:

1st. That our system of permanent coast defences is a wise and proper one, which ought to be completed and armed with the least possible delay.

2d. That mere individual courage cannot suffice to overcome the forces that would be brought against us were we involved in a European war, but that it must be rendered manageable by discipline, and directed by that consummate and mechanical military skill which can only be acquired by a course of education instituted for the special purpose, and by long habit.

In the day of sailing-vessels the successful siege of Sebastopol would have been impossible. It is evident that the Russians did not appreciate the advantages afforded by steamers, and were unprepared to sustain a siege.

This same power of steam would enable European nations to disembark upon our shores even a larger force than that which finally encamped around Sebastopol. To resist such an attack, should it ever be made, our cities and harbors must be fortified, and those fortifications must be provided with guns, ammunition, and instructed artillerists. To repel the advance of such an army into the interior, it is not enough to trust to the number of brave but undisciplined men that we can bring to bear against it.

An invading army of 15,000 or 20,000 men could easily be crushed by the unremitting attacks of superior numbers; but when it comes to the case of more than 100,000 disciplined veterans, the very multitude brought to bear against them works its own destruction; because, if without discipline and instruction, they cannot be handled, and are in their own way. We cannot afford a Moscow campaign.

Our regular army never can be, and, perhaps, never ought to be, large enough to provide for all the contingencies that may arise; but it should be as large as its ordinary avocations in the defence of the frontier will justify; the number of officers and non-commissioned officers should be unusually large, to provide for a sudden increase; and the greatest possible care should be bestowed upon the instruction of the special arms of the artillery and engineer troops.

The militia and volunteer system should be placed upon some tangible and effective basis, instructors furnished them from the regular army,

and all possible means taken to spread sound military information among them.

In the vicinity of our sea-coast fortifications it would be well to provide a sufficient number of volunteer companies with the means of instruction in heavy artillery; detailing officers of the regular artillery as instructors, who should at the same time be in charge of, and responsible for, the guns and material.

In time of war, or when war is imminent, *local* companies of regular artillery might easily be enlisted for short terms of service, or for the war, in the sea-coast towns. The same thing might advantageously be carried into effect on a small scale, in time of peace.

EUROPEAN ENGINEER TROOPS.

THE RUSSIAN ENGINEER TROOPS,

As has been stated previously, are organized in battalions of four companies each, a battalion being attached to each army corps. Each company consists of 1 first captain, 1 second captain, 1 lieutenant, 1 second lieutenant, 1 ensign, 20 sergeants, 6 musicians, 230 corporals and privates. There are three classes of privates, with different rates of pay. No extra pay is allowed them for any kind of work.

Forty men in each company carry a rifled carbine, the rest have the ordinary infantry musket; all carry tools of some kind. The general equipment, drill, &c., is as for the infantry. The drivers are not detailed from the companies, but are a distinct set of men.

The officers of the sappers are distinct from those of the corps of engineers, and need not have passed through the engineer school, but may enter at once from any of the military schools.

The engineer troops have charge of the bridge train. Their general duties are as in most other services, including the repairs of roads, &c.

The use of armor in the trenches has been abandoned. The tools, pontons, wagons, &c., are made at the engineer arsenals of construction. In a siege, all the works, including the batteries, are made by the sappers.

COMPANY AND BATTALION SCHOOLS.

These are under the supervision of the junior field officer of the battalion; the method of mutual instruction is pursued, and text-books are provided.

In each company school the following branches are taught: 1, reading; 2, writing; 3, religion, *i.e.* the ten commandments, the creed, and the principal prayers; 4, arithmetic, *i.e.* the four rules for single and denominate numbers; 5, reading extracts from the School of the Recruit, with questions and answers.

In the lower class of each battalion school the following subjects are taught: 1, in religion, the catechism and short extracts from the Scriptures; 2, the chief rules of grammar and parsing; 3, in arithmetic, the repetition

of the four ground rules, fractions, proportion, raising to the second power, and extracting the square root; 4, in geometry, the drawing, nomenclature, and properties of figures; 5, writing.

In the higher class of the battalion school the course is as follows: 1, in the Russian language, the rest of the grammar, and writing from dictation; 2, in arithmetic, simple, inverse, and double rule of three, with its application to examples, the extraction of the cube root; 3, algebra, as far as simple equations; 4, geometry, with the calculation of plane surfaces; 5, writing; 6, the drawing of the different objects relating to the duties of sappers, miners, and pontoniers; 7, in summer, the practical solution of simple geometrical problems by means of cords and stakes, execution of field works, saps, mines, &c., with the names of their different parts.

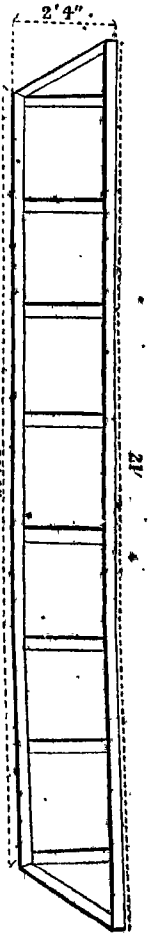
MILITARY BRIDGES.

The Birago equipage has been partially introduced, especially the trestles, but the Russian engineers seemed to prefer their own system of canvas pontons.

I was informed that in the Hungarian campaign the advantage was altogether on the side of the canvas pontons, and that, as a general thing, their bridge was thrown and the troops crossing before the Austrian Birago wagons could fairly come into position: it was also stated that when the roads were bad the Austrian train required ten horses for each wagon.

The canvas pontons consist of two wooden side frames, connected by movable transoms, with a painted canvas cover stretched over the bottom, ends, and sides.

The annexed figure gives the shape and dimensions of one of the side frames, which are made of about 4″ scantling. The bottom transoms have tenons at each end, which fit into mortises in the bottom sills of the side frames; the two top transoms are laid on the top pieces of the side frames about 2′ from the ends, and are lashed to them. The boat is 5′ 4″ wide from out to out.



The canvas cover is painted black on both sides; it is 10′ 8″ wide, 30′ long in the middle, 23′ 3″ long along the edges. This cover is brought over the ends of the frame and lashed to the top transoms; it is secured along the sides to the top string-pieces of the side frames by small nails passing through eyelet-holes along the edges of the cloth.

A plank is laid along the bottom for the pontoniers to stand on. The cables are attached to the top transoms. There are four balks for each boat, each balk being 23′ 4″ long, 5″ deep, 4″ wide; the side rails are 21′ long, and of 3″ scantling; four chesses are 12′ 2″ long, 1.5″ thick, and 18.6″ wide, the rest being of the same length and thickness, but only 9.3″ wide. The balks of adjacent bays are connected by iron bolts and keys. There are special supports for the hand-ropes. The Birago trestle and abutments are used with this train. The wagon is very simple; it has four wheels, a flat open bottom, with a stanchion about 3′ high at each angle. In loading, the four broad chesses are laid on edge against the stanchions, two on each side, thus forming the sides of the wagon; the narrow chesses are laid on the bottom, then the balks, side rails, ponton-frames, oars, &c., the anchor and cable on top of all. The canvas cover is rolled on a boat-hook and hung to the stanchions on the right-hand side of the wagon.

To pass a siege train over this bridge, the boats are placed 8′ apart, from centre to centre, and six balks are used instead of four. In other cases the distance between the centres of the supports varies from 11′ 8″ to 16′ 7½″, according to the method of construction and the load to be crossed over.

I saw a bridge of fifteen bays thrown over a lake, by cadets, in forty-five minutes. In this time the wagons were unloaded, the boats put together, &c.; two of the bays were on Birago trestles, and two on Birago pontons.

The canvas ponton, with its cover, complete, weighs 720 pounds.

Floatation of each ponton, 13,428 pounds.

Weight of flooring, &c., of one bay, 1,476 pounds.

Other materials packed on each wagon vary from 144 to 378 pounds.

Total load of each wagon, from 2,340 to 2,574 pounds.

Weight of empty wagon, 1,206 pounds.

The weights and dimensions given above are derived from the Russian Aide-Mémoire of the Engineers, pp. 143 to 145.

LEATHER PONTONS OF THE MOUNTED ENGINEER TROOPS.

These are made of varnished leather, stretched over a wooden frame. The boats, or pontons, are 20′ long; greatest width, 5′ 7″; depth, 2′; weight, 972 pounds; floatation, when sunk to the depth of 2′ 8″, 5,760 pounds.

For each boat there are 8 balks, each 18′ long and 4″ square, and weighing 72 pounds.

For each bay there are 12 chesses, each 12′ long, 18½″ wide, 2″ thick, and weighing 101 pounds.

Each ponton is carried on a wagon, together with 8 balks and some other materials.

On other wagons are carried the chesses for two bays and the remainder of the material.

The weights of these wagons and their loads are as follows:

Boat-wagon, empty	2,178	pounds.
The boat	972	"
8 balks	576	"
Other materials	540	"
Total	4,266	"
Chess-wagon, empty	2,196	pounds.
24 chesses	2,424	"
Other materials	270	"
Total	4,890	"

Each wagon is drawn by 6 horses.

Each leather boat will transport 25 men, with their arms and accoutrements.

A raft formed of two boats will transport one gun, or 6 horses.

The foregoing account of this bridge is also derived from the Russian Aide-Mémoire, (edition of 1848,) pp. 153 and 154.

I had no opportunity of examining a train of this kind.

Raft bridges are much employed and admirably handled by the Russians. There is a very fine one, with a draw, over the Vistula, at Modlin.

FIELD WORKS.

The *normal dimensions* of the *different parts* are as follows:

Ditch, not less than 10½′ wide at top; from 6′ to 9′ deep; base of scarp and counterscarp, from ½ to ⅔ of the depth.

Parapet, from 7′ to 8′ high; thickness against infantry, 4′; against artillery, from 9′ to 14′; interior slope, ½; exterior slope, ⅜ or ¼, according to the soil.

Banquette, 3′ to 4½′ wide, 4′ 4″ below the interior crest.

Berm, 1½′ to 3′ wide.

Embrasures, 1′ 9″ wide at the throat; exterior opening depends upon the thickness of the parapet and the desired field of fire; sole, 3′ to 3′ 3″ above the platform.

Merlons, 7′ to 8′ high, 17½′ to 21′ from axis to axis of the embrasures.

Barbettes, 3′ to 3′ 3″ below the interior crest, 17½′ to 24′ deep, 14′ wide.

Gun and howitzer platforms, 9′ wide, 17½′ to 21′ long.

Mortar platform, 7′ wide, 7′ to 9′ long.

A *gun or howitzer platform* consists of: 1st, a hurter, not less than 9′ long × 6″ square; it is bisected at right angles by the directrix; 2d, 3 or 5 sleepers, (according to the soil,) not less than 6″ square, and as long as the platform; the outside sleepers are 5½′ apart from centre to centre, and are parallel to each other; 3d, flooring planks not less than 2″ thick.

A *mortar platform* consists of: 1st, 3 sleepers 8″ square and as long as the platform; 2d, flooring timbers 7′ long and 8″ thick.

ARRANGEMENT OF THE WORKING PARTY ON A FIELD WORK.

From four to five men are assigned every six running feet of the ditch, according to the strength of the profile. In easy soil each of these parties has one pick or mattock, four shovels, and one earth-rammer; in difficult soil there should be two-thirds shovels and one-third picks; in very difficult soil, one-half shovels and one-half picks.

The workmen are placed in four ranks, which are 6′ apart; the first rank in the ditch, near the counterscarp; the second at the middle of the ditch, opposite the intervals of the first rank; the third on the berm; the fourth on the parapet.

The first rank carry their excavation to the depth of 3′, from the counterscarp to the middle of the ditch, and throw the earth on the berm; the second rank work from the middle of the ditch towards the scarp, throwing the earth on the berm and parapet; the third rank throw the loose earth from the berm towards the interior slope; the fourth rank level the earth on the parapet, ram it, form the slopes, &c. If the ditch is more than 10½′ wide, the first rank throw their earth towards the scarp, whence the second rank throw it on the berm. The scarp and counterscarp are at first cut down in steps, being afterwards trimmed off to the proper slopes.

Any superfluous earth is formed into a glacis.

In a ditch not more than 4′ deep, in good soil, two men can in ten hours excavate and shovel off 343 cubic feet; in a ditch from 4′ to 5½′ deep, one additional man is required to do the same work; in a ditch more than 5½′ deep, four men, two of whom have barrows or baskets, are required to do the same work. The interior slope is always revetted with fascines or hurdles; in default of these, with sods. The exterior slope is revetted with fascines or hurdles only when the parapet is of sand.

When the work is to stand for some time, the exterior slope and the counterscarp may be revetted with sods.

Parties of seven sappers each are detailed to revet the interior slope; the three oldest soldiers arrange the slope, the other four bring up the materials. Each party should revet 24 running feet, and is provided with one iron hammer, one bill-hook, and 1 handsaw.

SECONDARY MEANS OF DEFENCE.

Inundations should not be less than 5′ deep.

Chevaux-de-frise.—Body of square timber, 9′ long; the lances project 5′, are 1½″ in diameter, and 9½″ apart.

Palisades.—Of round timber, 9½′ to 10½′ long, 8″ in diameter; point, 1′ long; butts charred. They are placed at the foot of the scarp or counterscarp, or in the middle of the ditch. The trench to receive them is 1½′ wide and 2½′ deep. The palisades are from 2″ to 3″ apart.

Stockades are double palisades, employed against light artillery.

The military pits are from 5′ to 6′ deep, upper diameter 6′, lower diameter 1½′; the stake from 4″ to 5″ in diameter, and projects 4½′ above the bottom of the pit.

Fraises, entanglements, abatis, caltrops, &c., are also employed.

SIEGE MATERIALS, ETC.

The usual mathematical and surveying instruments are provided. The tools are generally inferior in quality.

Common fascine.—6′ or 12′ long, 2′ in circumference; withes from 1′ to 2′ apart.

Battery fascine.—18′ to 21′ long, 1′ in diameter; withes 10″ to 12″ apart.

Sap fagot.—2½′ long, 10″ in diameter; central stake projects 6″.

The trestles of the fascine cradles are from 2½′ to 3′ apart; the stakes of which they are made are 5′ to 6′ long, diameter 3″ to 4″ at the butt; points enter the ground 3′ apart, and cross 3′ above the ground.

The brush for fascines is not more than 1″ in diameter. A fascine party consists of six men: two for preparing the brush, one to prepare the withes, two to lay and choke the brush, one to remove the fascine when completed. Each party is provided with two bill-hooks, one hatchet, one measuring-rod, one cord to measure the circumference, and one choker.

Gabion.—The sap gabion is 30″ high, 24″ in diameter, and has 9 stakes; each stake 3½′ long, and from 1½″ to 2″ in diameter.

Battery gabion.—4′ high, 3′ in diameter, 13 stakes. In all gabions the stakes should be 8′ apart.

A gabion party consists of three men, and is provided with one measuring-rod, two bill-hooks, and one hatchet.

Sap roller.—7½′ long, 4′ in diameter, stuffed with wool or fascines, and closed at both ends by wattling. It has 17 stakes.

The brush being cut for them, and it being only required to trim off the leaves and twigs and to wattle, a party of three men can in four hours finish three sap gabions, two battery gabions, or one-third of a sap roller.

Hurdles are from 4′ to 9′ long; stakes, from 4′ to 7′ long, 2″ in dia-

meter, and 1′ apart. A party of three men can make 53 square feet of hurdles in four hours, the brush being already cut.

Sand-bags.—2′ long, 8″ to 9″ wide.

Sods.—18″ long, 12″ broad, from 5″ to 6″ thick.

Average weight of different sap materials.

	Pounds.
Common fascine, 6½′ long, 8½″ diameter	31½
Battery fascine, 20′ long, 1′ diameter	288
Sap fagot	17
Sap gabion	43 to 54
Sap roller, empty	324
Sap roller, stuffed with fascines	1,080 to 1,296
Sand-bag, filled	36 to 40

SIEGE OPERATIONS.

Simple trench.—In easy soil, that can be worked by the shovel alone, the men are placed 4′ apart; when the pick is required, 3′ apart; in very difficult soil, 2′ apart. The communications leading to the first parallel have the following profile: trench, 3′ deep at the berm, 8′ to 9′ wide at bottom; parapet, 4′ high and 9′ thick at base. This should be completed the first night. Next day the first parallel receives the following dimensions: parapet, 4′ high, 16′ thick at base; trench, 9′ wide at bottom in the clear, 3′ deep in front; two steps, revetted with fascines, against the berm slope, and one broad step on the reverse slope.

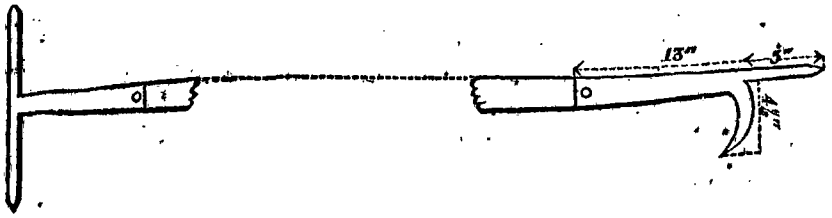
As regards their appearance, when completed, saps are *single*, *double*, or *covered*; with respect to the mode of execution, they are *flying* or *slow*.

The single sap affords cover from one direction only; the double sap, on both sides; the covered sap, on both sides and above; the latter is employed to give protection against a ricochet fire, or when descending a slope, or when following along the foot of a hill.

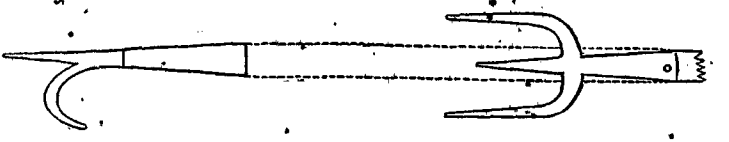
In the flying sap the gabions are all placed and filled simultaneously; in the slow sap the gabions are placed and filled one at a time.

For each head of the slow sap 24 sappers are detailed and divided into 4 reliefs; there is one non-commissioned officer with each relief, and 1 officer for every 2 reliefs.

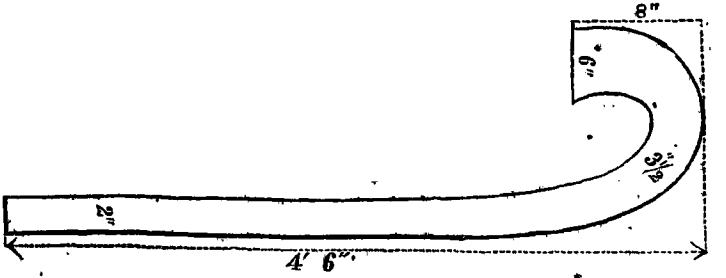
For each head of sap the following tools are necessary: 2 sap hooks, 9′ long, as in annexed sketch:



1 square; 1 arm 1′ long, the other 18″, as a measure for the 1st sapper; 3 measures for the 2d, 3d, and 4th sappers, respectively, 2′, 2½′, and 3′ long; 4 hand-axes, to cut turf and roots; 4 picks, or mattocks, according to the soil; 6 shovels; 2 axes; 1 tracing-cord; 2 sap forks, each 5′ long, as shown by the annexed sketch:



1 seven-foot measure; 2 handspikes, 7′ long, 6″ square; 1 roller, 4′ long, 18″ in circumference; 1 block, 2′ long, 6″ square, as a fulcrum for the handspikes; 1 curved wooden mallet, of the shape and dimensions shown in the annexed figure, for driving down the crowning fascines, &c.:



For each head of sap the following materials are required: 1 sap roller; sap gabions; sap fagots; fascines; stakes, 2½′ long, for fastening the fascines; sand-bags.

Each relief is relieved after filling 18 gabions, which should be accomplished in 3 hours.

The first sapper fills 3 gabions, and then becomes No. 6; No. 2 becomes No. 1, &c. The end of the sap roller is on the alignment of the exterior surface of the gabionade. The joint between the sap roller and the gabion in the course of being filled is not covered; the next 12 joints are each covered by 2 sand-bags on end; after that with sap fagots.

Temporary crowning fascines are not habitually used.

Execution of the single sap.—The 1st sapper leaves a berm of 1′; his form is 18″ deep, 1′ wide at bottom; base of berm slope 1′; he works on his knees. The 2d sapper follows No. 1 at the distance of 3 gabions; his form is 2′ deep, 2′ wide at bottom, berm slope ⅔; he throws his earth over the gabionade, and works on his knees. The 3d and 4th sappers crown the gabions opposite their forms with one layer of 2 fascines, and then complete their respective forms, preserving the berm slope of ⅔; the form of No. 3 is 2½′ deep by 2½′ wide at bottom; that of No. 4 is 3′ deep and 3′ wide at bottom. Each sapper follows at 3 gabions behind the one in front of him. In the mean time, Nos. 5 and 6 pass up the materials,

place and secure with pickets the 2d layer of fascines, remove the sand-bags from the joints, and replace them by sap fagots.

Nos. 2 and 3 manœuvre the sap roller.

Boyaux made by the single sap are 6′ wide at bottom.

Double sap.—This is 12′ wide between the two rows of gabions. Its trench, when completed, is 10′ wide at top, 6′ at the bottom. The head is covered by two ordinary sap rollers, not united in any way, the joint being closed by sand-bags, or a wool-bag. If it is necessary to throw the sap rollers farther out than usual, the opening left between them may be covered by a short sap roller.

The covered sap.—In this, blindage frames are used, each consisting of two stanchions $10\frac{1}{2}'$ long $\times$ 7″ square, and of two cross pieces, the upper of which is 10″ $\times$ 7″, the lower 7″ $\times$ 5″. The frame is 4′ wide from out to out, and $7\frac{1}{2}'$ high from out to out of the cross pieces. The stanchions project equally beyond both cross pieces, and have points 9″ long. The frames rest against the berm slope, having its inclination. Two cross beams, each 16′ long and 10″ $\times$ 7″, rest on each top cross piece. Five longitudinal beams of a similar section are laid on the cross beams; on top of these two layers of fascines, and on top of them 3′ of earth. The trench thus formed is 7′ high in the clear and 6′ wide at bottom. In pushing the sap from the crowning of the breach, the first sapper makes his form 3′ deep and 2′ wide at bottom; each of the other sappers widens and deepens it 1′.

MINES.

Frames of grand galleries are 6′ high and 3′ wide in the clear.

Frames of common galleries are $4\frac{1}{2}'$ high and 3′ wide in the clear.

Frames of branches are $2\frac{1}{2}'$ high and 2′ wide in the clear.

All parts of the frames are 5″ wide; the caps are from 5″ to 9″ deep, the sills from 3″ to 5″ deep.

For branches, the width and depth are diminished 1″.

The frames of Dutch galleries are of 2″ plank, and from 6″ to 9″ wide.

Each party of miners consists of three non-commissioned officers and eighteen men, divided into three reliefs, each relief working six hours. In ordinary soil, where no unusual obstacle is encountered, each relief should drive from 3′ to 4′ in six hours.

In defending any position by field works, the system pursued was to occupy the flanks and other important points of any given line by redoubts, lunettes closed or palisaded at the gorge, &c., afterwards connecting them by continuous lines if time was afforded, and the locality rendered it advisable. When circumstances were favorable, the command of the works was usually from 9′ to 12′, or even more; the parapets 16′ to 20′ thick. In the ditches of the works, which were leisurely con-

structed, palisades, fraizes, caponières, block-houses, blinded batteries, &c., were freely and judiciously employed. In some cases all the slopes were revetted with sods. The embrasures varied much in size, according to the circumstances of the particular case; the soles generally sodded, the cheeks revetted with sods, gabions, or fascines. Generally, every two guns had splinter-proof gabion traverses from two to three tiers in height, two to three gabions wide at bottom, and one at top; no fascines between the tiers; the gabions vertical, with offsets. There were usually banquettes between the embrasures, which latter were provided with rope mantelets: the magazines generally of a pentagonal section, and covered with 12″ timber, a layer of fascines, and 6′ of earth; the cartridges placed on shelves.

The works intended to act against shipping were provided with hot-shot furnaces, and heavy guns were employed. Whenever the field works were at all leisurely constructed, nothing could have been more perfect and creditable than their details.

On many of the barbette water batteries, the following arrangement was used for aiming: The rear traverse circle was graduated to small fractions of degrees; on the parapet was a small arc graduated proportionally; a wooden slat about 3′ long, and provided with an index traversed on this arc; on top of the slat were two fine needle sights. It was only necessary to sight the ship to be fired at with these needle sights, take the reading shown by the index, and then run the gun to the same reading on the rear traverse circle.

THE PRUSSIAN ENGINEER TROOPS.

They are called pioneers, and perform the duties of sappers, miners, and pontoniers. They are officered by details from the corps of engineers, and are organized in divisions of two companies each. In time of war, a reserve or depot company is added to each division. There is a division for each of the nine army corps, and two independent companies for the Confederation fortresses of Mayence and Luxembourg. On the war footing, the strength of each company is as follows:

4 officers.
1 orderly sergeant.
1 ensign, (a non-commissioned officer in the line of promotion.)
3 sergeants.
9 master pioneers, (an intermediate grade of non-commissioned officer.)
9 corporals.
189 privates, including one hospital attendant.
3 musicians.

226 men, exclusive of officers, surgeons, and drivers.

In peace, the strength is reduced to about one-half. The drivers of the tool and ponton wagons are soldiers of the train, and are not taken from the companies.

When the whole army is placed on the war footing, the strength of the pioneers is 7,743 men, exclusive of officers, surgeons, and drivers. All the pioneer material is made at the engineer arsenals. In the trenches armor is not used. Experiments have been made with helmets and cuirasses made of three thicknesses of bull's hide; the results are said to be satisfactory. The men carry tools in slings, never attached to the knapsack. They are armed with a light musket, having an ordinary bayonet. Pioneers are employed as overseers, clerks, master-workmen, &c., in the construction of permanent works.

MILITARY BRIDGES.

The Birago trestle has been definitively adopted, but somewhat diminished in dimensions; his sectional ponton only partially, if at all. I saw none in use or in store.

The boats are of wood, and are $20' \times 5' \times 2\frac{1}{2}'$. The balks are $18' \times 5\frac{1}{2}'' \times 4\frac{1}{2}''$; chesses, $12' \times 10'' \times 1''$. The anchors are of two sizes, the smaller weighing 80 lbs.

The wagons are drawn by six horses, and weigh, loaded, from 4,800 to 5,400 lbs. The balks and chesses are secured on the wagons by bolts; the boat is placed on top, bottom upwards; the cables, oars, anchors, &c., are placed under it. There are two oars and one boat-hook for each boat; buoys, sounding-poles, &c., are provided. A bridge train consists of 32 boats, and requires for its transportation 34 boat-wagons, 5 store-wagons, 1 travelling forge, 238 horses, and a company of the train, (drivers,) consisting of 1 officer, 6 non-commissioned officers, and 119 drivers. The company of the train is organized only when the troops are placed on the war footing, since horses are provided only in that event.

Each division of pioneers has 1 bridge train, constituted as above. In addition each division has also a light advanced guard trestle bridge train, which consists of 10 wagons, can follow all the movements of artillery, and most of those of the cavalry.

Some of the officers spoke very highly of the Birago trestle; but stated that it did not answer well on a very boggy bottom. Nothing peculiar was observed in their manner of throwing and dismantling the bridge; it was well and rapidly done; the formation of the various detachments is similar to our own system.

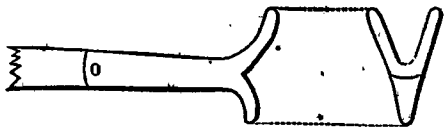
SAPS.

Gabions—30" high, exterior diameter 20", 7 stakes, bound by 4 withes at one end and by 3 at the other.

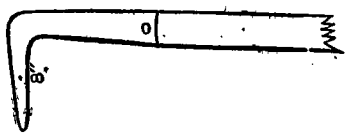
Sap fagots are used, but are generally replaced by sand-bags. Sand-bags 10″ × 15″ empty, 6″ × 9″ when filled. Temporary crowning fascines are not used.

The sap rollers are of 2 concentric gabions, in the English style; the outer cylinder is 9′ long, 3′ 4″ diameter at the centres of the stakes, and has 23 stakes; the inner cylinder is 7′ long, and 1′ 9″ in diameter. The space between the two cylinders is stuffed with fascines, and the ends closed by wooden circles of 2″ stuff. The picks and shovels are quite light; the latter have straight handles. The usual handspikes, chocks, &c., are employed.

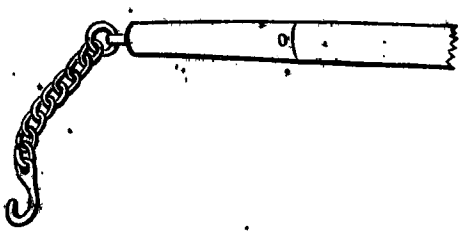
The annexed sketch represents the sap hook.



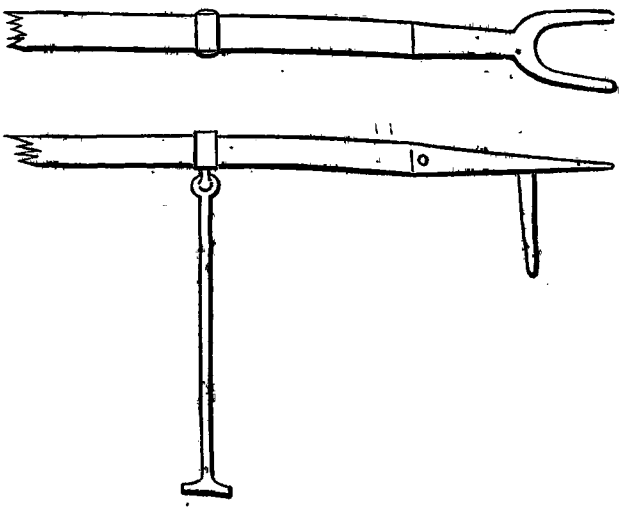
The opposite figure shows the butt of the reverse sap hook.



The annexed figure represents the butt of the berm sap hook, a chain being fastened to the ring and a hook to the end of the chain; the hook is hooked to the wattling of the gabionade, and thus held secure.



The annexed sketch represents the sap fork; its vertical branch is unusually long; the bar, attached by a pin to the handle, serves as a fulcrum in placing the gabion.



A brigade for the full sap is composed of 1 non-commissioned officer and 8 men; the leading sapper fills 2 gabions before changing; the manner of working, changing, &c., presents nothing peculiar.

The centre of the sap roller is placed on the alignment of the interior slope of the gabionade. In the double sap the rollers are never fastened together; the interval between them is covered by a short roller, or by a pile of sand-bags.

In the full sap the berm is from 1′ to 2′, according to circumstances. No. 1 always keeps one filled gabion in advance of the head of his form.

The forms of the sappers are as follows: No. 1, 18″ × 18″; No. 2, 24″ × 24″; No. 3, 30″ × 30″; No. 4, 36″ × 36″. Each sapper has a wooden measure of his form. In crowning the covered way the sap is 4′ deep.

At the head of the double sap there is a rod as long as the clear interval between the gabionades; this passes through rings at the ends of two sticks, one of which is at the side of each 1st sapper, and is used to verify the positions of the gabions last placed.

The hurdle, sod, and fascine revetments, military pits, palisades, huts, &c., are well executed, but present nothing novel.

Mines.—The galleries and shafts are well and neatly executed. I observed but two peculiarities in regard to the galleries: first, instead of connecting the stanchions of adjacent frames by battens nailed to them, pieces of 3″ scantling, as long as the clear interval between the frames, are driven in between them sideways and horizontally; second, before driving the wedges between the ends of adjacent lengths of sheeting, a strip of board is driven in, edgewise, between the ends of the sheeting planks, at right angles to them. In the shafts the frames are supported from below.

THE AUSTRIAN ENGINEER TROOPS.

Their duty is confined to that of sappers and miners, and the construction of permanent works. In a siege the batteries are built by the artillery. The construction of all kinds of bridges, and of field fortifications, the repairs of roads, &c., are intrusted to the pioneers, a special corps belonging to the general staff.

The engineer troops receive, however, a certain amount of instruction in these duties, that they may be able to perform them in case of necessity.

There are 12 battalions of engineer troops, of 4 companies each. A company consists of—

1 captain.
4 lieutenants.
4 sergeants.

8 conductors, (an intermediate grade of non-commissioned officer.)
16 corporals.
32 lance corporals.
148 privates.
2 musicians.

215—total.

The officers are detailed from the corps of engineers. Each company is divided into four platoons, one of which is especially instructed as miners, the remaining three as sappers.

They are armed with a rifled weapon, having a 26″ barrel, and a bayonet 19″ long.

Figures 1 and 2 show the uniform, accoutrements, manner of carrying picks and shovels, mode of packing the overcoat, &c.

Fig. 3 shows the formation of a company of engineer troops, as well as the distribution of the various tools. In addition to the various tools mentioned in that plate, each man carries a little bag containing small tools, nails, &c.

The composition of a brigade for the full sap is the same as in the French system. The most striking peculiarity in the Austrian system is their method of executing the full sap.

Upon commencing his work, No. 1 finds his form 2½′ wide and 1½′ deep for the width of one gabion from the head, in rear of that it is 3′ deep; at the point where the form of No. 3 begins the trench is 3′ wide. A mantelet is often used on the berm to cover the 5 leading gabions, in rear of the sap fagots. No. 1 places a gabion, and fills it with the earth obtained by cutting away the step at the head of his form, assisted by No. 2, who throws into the gabion some of the loose earth he finds in his form. The gabion being filled, No. 1 continues his work until he has not only cut away the step at the head of his form, but has excavated another just like it, extending to 2′ from the sap roller; after he has filled the gabion, he passes back the loosened earth to No. 2, who throws it over the gabionade, always taking care to leave some loose earth to assist in filling the next gabion placed. No. 3 carries the sap to the full width; No. 4 places the sap fagots, &c.; No. 1 is relieved after having filled one gabion and completed the excavation just described; his task usually occupies 20 minutes. Temporary crowning fascines are sometimes used. The sap roller consists of a single cylinder, stuffed with fascines.

THE AUSTRIAN PIONEERS.

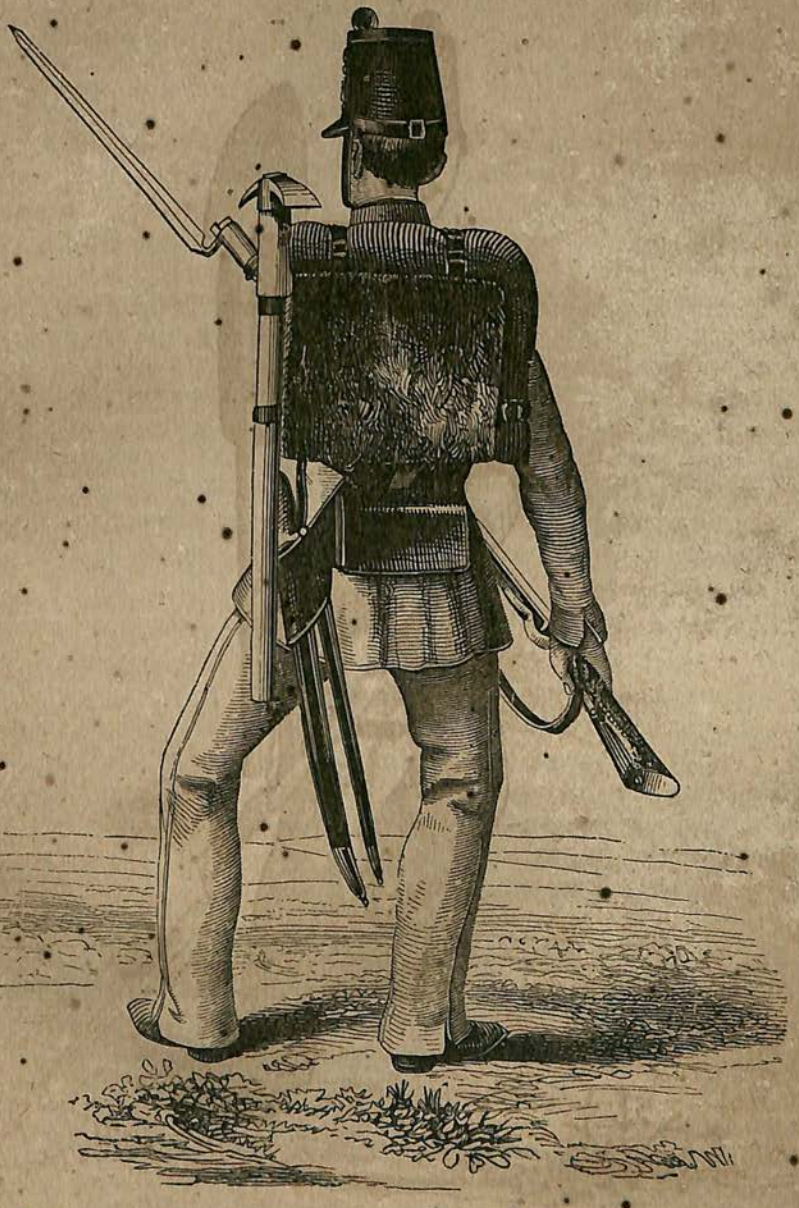
As has already been stated, this corps is attached to the general staff, and constructs all military bridges, field works, roads, &c.; detachments

Fig. 1.

Austrian engineer soldier.

Fig. 2.

Austrian engineer soldier.



from it assist in making surveys. The officers are distinct from those of the general staff, and are promoted in the arm.

There are 6 battalions, of 4 companies each. A company consists of:

1 captain.
4 lieutenants.
2 sergeants.
20 corporals.
40 carpenters, (20 of the 1st and 20 of the 2d class.)
160 pioneers, (40 of the 1st and 120 of the 2d class.)
2 musicians.

229—total.

The company is divided into 4 platoons,—their arms, accoutrements, and mode of carrying tools being precisely like those of the engineer troops. Figures 1 and 2 will give all the requisite information.

Fig. 4 shows the formation of a company and the distribution of the tools. In addition to the tools, &c., mentioned in the figure, 3,000 nails and various small tools are divided among the men; the maximum load of any one man is 45½ pounds, every thing included.

The Birago equipage is exclusively used, and has undergone no modification, except that the sections of the boats are connected by bolts and keys in addition to the hooks on the sides.

Experiments are now being made to substitute boiler-iron boats for those of wood; it was stated that they were of about the same weight as the wooden ones, and that they would probably be adopted. I observed a number of them at Klosterneuberg. All the bridge materials, and most of the pioneer tools, are made by the men of the corps, the principal arsenal of construction being at Klosterneuberg, near Vienna.

Each company has two bridge equipages; an equipage consisting of the pontons, trestles, &c., necessary to form a bridge 174′ long; 15 wagons transport this amount of material, and they are so packed that the equipage may be divided into ½, ¼, and ⅛.

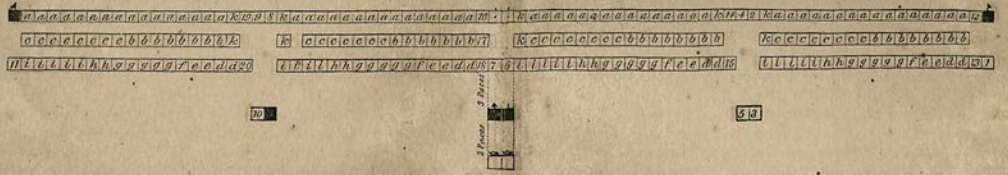
The composition, details, and properties of the Birago bridge are so well known to all interested in the subject, through Haillot's excellent description of it, and Birago's "Examination of the European Systems of Military Bridges," that it is altogether unnecessary to describe it here.

For the pioneers, as well as for the engineer troops, there are special tactics for the infantry drill of the recruit, company, and battalion drills.

All the details of the Austrian system of the field duties of the pioneers, such as field fortifications, labors in camp, repairing roads, making bridges, &c., will be found in an excellent work entitled, "Technical Pioneer-Service in the Field, by Captain Wasserthal;" or, in the original, "Technischer Pionier-Dienst im Felde, von Konstantin Wasserthal, K. K.

Fig. 3.—Company of engineer troops (Austrian.)

Fig. 4.—Company of pioneers, (Austrian.)



Captain.

1st lieutenant.

2d lieutenant.

1st sub-lieutenant.

2d sub-lieutenant.

Sergeant.

Conductor.

Corporal.

Musician.

a Pickaxe-carriers.

b Shovel-carriers.

c Spade-carriers.

d Axe.

e Auger.

f Pincers.

g Clamp-iron-carriers.

h Saw-carriers.

i Men with two shovels.

k Men without tools.

Pionier, Hauptmann, etc.; Wien, Verlag von Carl Gerold und Sohn—1852."

THE FRENCH AND ENGLISH ENGINEER TROOPS.

Our own system of instruction being based upon the French and English, their organization and system are so perfectly well known in our service that any description of them may be dispensed with. It is believed that no essential changes have been introduced of late.

In the course of the observations made upon the operations near Sebastopol there arises the necessity of alluding to the manner in which these systems were carried into practice, as well as the temporary modifications rendered necessary by circumstances.

In concluding this brief account of the engineer troops of different European services, there are a few points to which I would ask to call the attention of our own officers of engineers.

In regard to the saps: there are several things which ought at least to be tried. Among them may be mentioned the Russian system of reducing the number of men in a brigade to 6; the Austrian method of executing the sap; the Russian curved mallet for fastening the crowning fascines; the Prussian sap hooks and sap fork; the system of leaving the two sap rollers at the head of the double sap unconnected, and covering the interval by a third roller or by sand-bags; the use of sand-bags, instead of sap fagots, for covering the joints at the head of the sap, and the Austrian manner of carrying tools.

In reference to bridges: I would recommend that the Birago trestle, in principle, at least, be definitively adopted as a part of our system. Its *universal* adoption on the continent of Europe, after careful trial, would appear to be sufficient evidence that its theoretical advantages are fully obtained in practice. On the march from Matamoras to Victoria and Tampico, in 1846 and 1847, we had very great difficulty in bridging boggy streams (there being no suitable timber) and in crossing ravines with vertical banks: a few bays of the Birago trestles would have saved us many days and a vast amount of labor. In the operations in the valley of Mexico, our movements, checked as they so often were by impassable wet ditches and sometimes by dry ravines, would have been rendered so much more free and rapid by the use of the Birago trestles that our successes could have been gained at far less cost, and probably with even more rapidity, than they were.

With respect to the boats: fully appreciating the great advantages arising from the lightness of our India-rubber pontons, I have never felt satisfied that they could afford, in practice, the advantages expected of them. The material deteriorates and becomes worthless very rapidly,—

probably the inevitable result of the process of manufacture. It is at least doubtful whether, even in new pontons, the manner of attaching the cable affords sufficient strength, should a heavy load cross the bridge, when thrown over a wide and rapid stream. The pontons are not fit to be used as boats in ferrying troops over rapid streams, especially under fire.

In attaching the frame to the ponton, the loops soon give way, and cannot be repaired in the field.

The bridge has never been fairly tested; that is, it has never been thrown across any stream, much less a rapid one, and a heavy load passed over it.

I would therefore suggest that the equipage ought not to be exclusively relied upon in the field until it has been tested by taking it to some place where it can be thrown over a rapid stream, at least 100 yards wide, and the heaviest loads passed over, and where, too, its capacity, in the form of single boats and rafts, can be fully tried. I would at the same time suggest the propriety of experimenting with sectional boats, after the manner of the Birago boats, but made of the corrugated iron.

Our force of artillery is large in proportion to the other arms of service, while the number of our engineer troops is ridiculously and shamefully small: it is, therefore, more than probable that in any future siege it will be easy for the artillery to construct their own batteries, while the engineers will be sufficiently burdened by the construction of the other works of attack. We have now, at last, the germ of an artillery school of practice: I would then suggest, for the consideration of the War Department, the propriety of causing the artillery to construct their own batteries. The position and armament of siege batteries should be determined by consultation between the engineers and artillery, the former having the preponderating voice, in order to secure the necessary harmony and connection between all parts of the works of attack.

I would recommend that the result of the experience of the engineer company be reduced to form, and that a full and detailed system for the construction of material, saps, mines, field works, bridges, construction of field ovens, repairs of roads, &c., be adopted and published for the benefit of the service.

If the artillery be charged with the construction of batteries, there should also be adopted and published for their use an artillery manual, comprising every thing in relation to the preparation of the fascines, gabions, platforms, and magazines, the dimensions of batteries, manner of arranging working parties, &c.

FRENCH, AUSTRIAN, PRUSSIAN, AND SARDINIAN INFANTRY.

THE FRENCH INFANTRY.

THE infantry of the French army is divided into several classes: 1st. The infantry of the imperial guard; 2d. The infantry of the line; 3d. The battalions of foot rifles, (*chasseurs à pied*,—formerly *d' Orléans*, or *de Vincennes;*) 4th. The zouaves; 5th. The light infantry of Africa; 6th. The foreign legions; 7th. The native (African) light infantry.

The infantry of the guard is organized in two divisions, each of two brigades.

1st division, 1st brigade: 1 regiment of gendarmes, 2 battalions; the 1st regiment of grenadiers, 4 battalions; the regiment of zouaves, 2 battalions.

2d brigade: the 2d regiment of grenadiers, 4 battalions; the 3d regiment of grenadiers, 4 battalions. Total of 1st division, 16 battalions.

2d division, 1st brigade: the 1st regiment of voltigeurs, 4 battalions; the 2d regiment of voltigeurs, 4 battalions; the battalion of foot rifles.

2d brigade: the 3d regiment of voltigeurs, 4 battalions; the 4th regiment of voltigeurs, 4 battalions. Total of 2d division, 17 battalions. Total infantry of the imperial guard, 33 battalions.

The battalions of gendarmes, grenadiers, and voltigeurs have 6 companies; the battalions of zouaves 7 companies, of which 1 is a depot company; the battalion of foot rifles has 10 companies.

The infantry of the line consists of 102 regiments, each of 3 battalions; the battalion has 8 companies.

There are 20 battalions of *foot rifles;* 10 companies in a battalion.

There are 3 *regiments of zouaves*, each of 3 battalions; the battalion of 9 companies, 1 of which is a depot company.

The light infantry of Africa consists of 3 battalions, each of 7 companies, 1 of which is a depot company.

There are 2 *foreign legions*, each legion of 2 regiments, the regiments having 3 battalions of 8 companies; to the 2d legion is attached, in addition, a rifle battalion of 10 companies.

The native light infantry consists of 1 regiment of 2 battalions, having 8 companies each, and of 6 independent battalions, varying from 3 to 8 companies each.

The staff of a regiment of 3 battalions consists of: 1 colonel; 1 lieutenant-colonel; 3 chiefs of battalion; 1 major; 4 adjutants, with the rank of captain, (*capitaine adjutant major;*) 1 treasurer, with the rank of captain, (*capitaine trésorier;*) 1 captain of clothing, (*capitaine d'habillement;*) 1 assistant treasurer, a sub-lieutenant; 1 standard-bearer, a sub-lieutenant; 3 surgeons.

To the staff of a regiment of 4 battalions 1 chief of battalion is added. On the staff of a regiment of 2 battalions there are but 2 chiefs of battalion and 2 adjutants.

To the staff of many of the regiments a lieutenant of the general staff (*état-major*) is attached, for his instruction in the service of the arm.

The staff of an independent battalion, such as those of the foot rifles, &c., consists of: 1 chief of battalion; 1 captain major, a captain doing the duty of major; 1 captain adjutant; 1 captain, as instructor of firing; 1 lieutenant, acting as treasurer; 1 lieutenant, acting as clothing officer; 2 surgeons.

The non-commissioned staff of a regiment of 3 battalions consists of: 3 non-commissioned adjutants, (sergeant majors;) 1 drum major, or chief bugler; 3 "corporal drummers," or buglers; 1 corporal of pioneers; 12 pioneers; 1 band-master; 1 corporal of musicians; 25 musicians.

For an independent battalion the non-commissioned staff consists of: 1 non-commissioned adjutant, 1 chief bugler, 1 corporal of buglers.

In each regiment there is a "*company out of ranks,*" composed of mechanics, &c.; attached to each independent battalion, a "*section out of ranks.*"

	Reg't.	Batt'n.
SERGEANTS.		
First sergeant	1	.....
Wagon-master, with the rank of 1st sergeant	1	1
Clerks of the treasurer	2	1
In charge of clothing magazine	1	1
Fencing-master	1	.....
Masters armorer, tailor, and shoemaker	*3	*3
CORPORALS.		
Clerk of treasurer	1	1
Quartermaster of the staff	1	1
Clerks of officers of clothing and armament	2	.....
Hospital steward	1	.....
Conductor of the train	.....	1

	Reg't.	Batt'n.
PRIVATES.		
Armorer, (1,) tailors and shoemakers	5	.....
Clerk of commanding officer	1	1
Clerk of lieutenant-colonel	1	.....
Clerks of treasurer and assistant treasurer	2	.....
Clerks of clothing officer	1	1
Armorers	2	2
Tailors, varying with the strength of the corps	27	18
Shoemakers, varying with the strength of the corps	23	15
Muleteers	.....	2
Enfant de troupe	1	.....
Total of company or section out of ranks	77	48

With the exception of the foot rifles, a company consists of: 1 captain, 1 lieutenant, 1 sub-lieutenant, 1 orderly sergeant, 4 sergeants, 1 quarter-master sergeant, 8 corporals, 96 privates, (the number of privates varies somewhat according to circumstances,) 2 musicians, 2 pupils in music, 1 enfant de troupe. In the foot rifles there are: an additional sergeant as instructor of firing, 4 buglers, no pupils in music, and from 100 to 130 privates.

The light infantry are formed in *two* ranks, the heavy infantry in *three* ranks.

The depot system appears to vary. In time of peace, one of the battalions may be used as a depot; in war, either additional companies are added to each battalion, or an additional battalion created for the purpose.

The duties of the colonel are about as in our service.

The lieutenant-colonel is in charge of all the order-books.

The chiefs of battalion are directly responsible to the colonel for the instruction, discipline, service, dress, condition of the arms, messing, quarters, &c., of their respective battalions.

It is the special duty of the major to examine and countersign all requisitions for arms, clothing, subsistence, fuel, &c.

The duties of the captain adjutants in their respective battalions correspond very nearly with those of our regimental adjutants.

The *tactics* of the French infantry have not been changed since they were adopted in our service. But little attention is paid to the individual "setting up" of the men; consequently, they present rather a slouching appearance. An exception to this rule is found in the élite corps, for which men with a good natural bearing are selected. Much irregularity is tolerated in marching, it being only required that the guides preserve

their distances with great exactness. In the movements of large columns it is very rare to see any mistakes in this matter. The men are allowed the utmost ease and latitude in ranks. Some essential parts of the French instruction have been omitted in our own, such as the system of gymnastics, natation, &c.

The smooth-bore musket is still in general use for the infantry of the line; the light infantry and élite corps have rifled arms. All buglers carry a rifle; the drummers have none. The infantry sabre is regarded by the men as a useless encumbrance: they are probably the best judges.

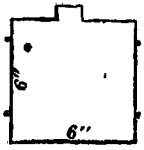
The grenadiers and voltigeurs of the guard have the old-fashion cross belts, without waist-belt; all other troops have only a waist-belt, the bayonet-scabbard, cartridge-box, &c., being attached to it.

The knapsack is of the pattern in possession of the Department. It is small and of cowskin, with the hair left on. The shoulder-straps pass straight over the shoulders, and hook to brass loops on the waist-belt. Another strap is fastened to the under surface of the knapsack near each outer corner, and buttons to the shoulder-strap a little above the armpit.

When the overcoat is not worn, it is rolled in a long roll, and strapped on top and on the two sides of the knapsack. The shelter tent is carried in the same manner, under the overcoat, if both are attached to the knapsack.

The shelter tent and manner of using it are described in connection with the French cavalry. The supporting sticks are in two parts, the pointed end having a sheet-iron socket into which the upper part fits. Each man carries one piece of the tent, one stick, and two or three small tent-pins.

The infantry rations are the same as for the cavalry; so also their cooking-utensils. In the infantry, each mess generally consists of 14 men, and has 2 gamelles, 1 lidon, 1 marmite, sometimes a stewpan in addition. The men of the mess take turns in carrying these, attaching them to the knapsack, or in any other manner they find most convenient. The knapsacks are never carried in the wagons.



The annexed sketch shows the form and dimensions of the canteen. It is of tin, covered with cloth, suspended by a cord.

The rations are generally carried in the knapsack.

The uniform of the infantry of the line is too well known to require description. In the Crimea, they wore the overcoat, with epaulettes, and

the forage cap; a jacket in camp. The frock-coats and shakos were left in France.

The grenadiers and voltigeurs of the guard have the uniform of the imperial guard of the first empire, except that pants are substituted for the old knee-breeches.

The foot rifles of the guard wear a jacket with long skirts, and very loose pants, which are tucked under leather gaiters extending to the top of the calf of the leg.

The infantry of the line, rifles, &c., wore a light-blue merino scarf, in lieu of a stock, in the Crimea.

The dress of the zouave is of the Arab pattern; the cap is a loose fez, or skull-cap, of scarlet felt, with a tassel; a turban is worn over this in full dress; a cloth vest and loose jacket, which leave the neck unencumbered by collar, stock, or cravat, cover the upper portion of his body, and allow free movement of the arms; the scarlet pants are of the loose Oriental pattern, and are tucked under gaiters like those of the foot rifles of the guard; the overcoat is a loose cloak, with a hood; the chasseurs wear a similar one. The men say that this dress is the most convenient possible, and prefer it to any other.

The zouaves are all French; they are selected from among the old campaigners for their fine physique and tried courage, and have certainly proved that they are what their appearance would indicate,—the most reckless, self-reliant, and complete infantry that Europe can produce.

With his graceful dress, soldierly bearing, and vigilant attitude, the zouave at an outpost is the beau-ideal of a soldier.

They neglect no opportunity of adding to their personal comforts: if there is a stream in the vicinity, the party marching on picket is sure to be amply supplied with fishing-rods, &c.; if any thing is to be had, the zouaves are quite certain to obtain it.

Their movements are the lightest and most graceful I have ever seen; the stride is long, but the foot seems scarcely to touch the ground, and the march is apparently made without effort or fatigue.

The step of the foot rifles is shorter and quicker, and not so easy and graceful.

The impression produced by the appearance of the rifles and of the zouaves is very different: the riffes look like active, energetic little fellows, who would find their best field as skirmishers; but the zouaves have, combined with all the activity and energy of the others, that solid *ensemble* and reckless dare-devil individuality which would render them alike formidable when attacking in mass, or in defending a position in the most desperate hand-to-hand encounter. Of all the troops that I have ever seen, I should esteem it the greatest honor to assist in defeating the zouaves. The grenadiers of the guard are all large men, and a fine-looking, soldierly set.

The voltigeurs are small, active men, but larger than the rifles; they are light infantry.

The appearance of the infantry of the line is by no means impressive; it requires close watching to appreciate their excellent qualities.

The regulations for the government of troops in the field are strictly carried into practice, and appear to work well: the only complaint appeared to be that the number of returns and accounts required was so great that it was impossible to make them out in time; the consequence was stated to be that most officers were very much behindhand with their accounts.

The regiments with the shelter tents generally bivouacked in line.

In the field portable ovens of sheet iron are frequently used. These, with all the necessary utensils, are packed in boxes which may be transported either on mules or in wagons; each division is provided with a set of these, which require from 2 to 3 wagons for their transportation. With the stone and earth usually to be found at the camp, these ovens can be set up and put in working order in 24 hours.

In the Crimea bread was baked in permanent ovens established at Kamiesch. Coffee was usually sent to the Crimea green, and roasted there by the men, each mess having a coffee-mill. The cakes of biscuit are $\frac{3}{4}''$ thick, about 3 to a ration; they are put up in boxes containing 100 rations, which pack well in the subsistence-wagon, or can be carried on mules. The exterior dimensions of these boxes are $31\frac{1}{4}'' \times 18\frac{1}{4}'' \times 13\frac{1}{4}''$. The biscuit is dried 15 days before being packed, is packed tight, and will keep for many years.

The system of fencing with the bayonet, which is in general use in the French army, does not differ materially from our own; a gutta-percha bayonet, with a button, is used. The System of Gymnastics (edition of 1847) gives the full details of all the materials necessary, and excellent plates illustrating the various exercises.

The system of instruction in natation, by the chief of battalion d'Argy, is simple and excellent.

There is a gymnastic school, near Vincennes, to which one sergeant or corporal is sent from every regiment and independent battalion. They remain six months at the school, the best pupils being retained six months longer as assistant instructors.

The course consists of gymnastics, scaling walls, swimming, fencing with the bayonet, singing, dancing, reading, writing, &c.

The agility and skill exhibited by the pupils were really wonderful.

The efficiency of the French infantry is in no small degree attributable to the great attention paid to these points throughout the army.

Shortly before our visit to the gymnastic school, a series of experiments had been carried on there, by authority of the minister of war, in a system

of field telegraphing, the invention of Mr. Swaim, an American. The object is to communicate orders and intelligence, as far as the eye can reach, by means of combinations of simple objects, such as a cap or coat on the point of a bayonet, &c. It was stated by the officers that the system worked admirably and was of value. It would be worth the while of our government to inquire into the matter.

At Vincennes there is a school of firing for officers of infantry. A lieutenant or sub-lieutenant is sent here every year from every regiment or independent battalion of infantry.

The course is of four months, and comprises the theory and practice of target-firing, full instruction as to the construction, use, and preservation of fire-arms, preparation of cartridges, &c.

In a lesson in aiming, given by the chief of battalion Minié, the gist of his instructions was this: Always press the butt against the shoulder; in aiming at a near object, (without the hausse,) raise the shoulder, in order to bring the low sight up to the level of the eye; in aiming at a distant object, (with the high hausse,) lower the shoulder, so as to bring the top of the hausse on a level with the eye.

The barracks generally allow sufficient space, but are not well arranged for the quietness of the men.

The bunks usually consist of boards supported by iron trestles; sometimes of iron bedsteads.

The police of the quarters is not generally good; but the habits of the nation are not remarkable for neatness.

In the field, as well as in quarters, the officers bestow the utmost care upon the comfort and well-being of the men, rightly regarding that as probably the most essential element to insure efficiency, contentment, and willing obedience. This example cannot be too strongly urged for imitation.

THE AUSTRIAN INFANTRY.

This consists of 62 regiments of the line, 14 regiments of frontier infantry, and 32 battalions of rifles.

During peace, the line regiments consist of 4 field battalions of 6 companies each, and 1 depot battalion of 4 companies. In war, the 4 grenadier companies are detached from their respective battalions and form a separate battalion, being replaced in the field battalions by new companies.

The frontier regiments have 2 field and 1 depot battalion.

Of the rifle battalions, 26 consist of 4 companies, the remainder of 6 companies each; each of the latter has a depot company, while there is 1 depot company for every two of the 4 company battalions.

A grenadier company consists of: 1 captain, 1 lieutenant, 2 sub-lieu-

tenants, 2 sergeants, 12 corporals, 150 privates, 2 drummers, and 2 pioneers.

The other infantry companies consist of: 1 captain, 1 lieutenant, 2 sub-lieutenants, 2 sergeants, 12 corporals, 12 lance corporals, 180 to 200 privates, 2 buglers, 2 drummers, and 2 pioneers.

A rifle company consists of: 4 officers, 2 sergeants, 12 corporals, 20 lance corporals, 160 privates, 2 buglers, and 2 pioneers.

The company is divided into 4 platoons, and the formation is always in 3 ranks.

The step is 30″ long, and at the rate of from 105 to 108 per minute.

The school of the recruit comprises the individual, squad, and platoon drills, in close order, and as skirmishers; it contains full instructions as to running, jumping, &c., detailed instructions in regard to target-practice and the theory of firing, and a full system for fencing with the bayonet.

In the skirmish drill the chain is composed of groups of three men; the rear rank, or a part of it, being habitually employed as skirmishers.

In the formation of a company in line, the captain is three paces in rear of the centre; if the company is alone, he is at half-company distance in front of the centre; the 1st lieutenant is on the right of the front rank; the 2d lieutenant on the left of the front rank; the 3d lieutenant by the side of the captain, when the latter is in rear of the company; the sergeants are in the front rank, between the second and third platoons; four corporals are posted as file-closers behind the centres of the wings of the company, the others on the flanks of platoons; the drummers and pioneers are six paces in rear of the centre; the buglers of an infantry company are on the right and left of the centre rank.

In a rifle company, the pioneers take the place just prescribed for the buglers of an infantry company, and the four buglers are posted six paces behind the centre of the company.

The field officers of a regiment consist of one colonel commanding, and one field officer (a lieutenant-colonel or a major) to command each battalion. There are a regimental adjutant (a lieutenant) and a battalion adjutant (a sub-lieutenant) for each battalion.

Each battalion has its own colors.

The interval between battalions is twelve paces.

The column by companies is the habitual column of manœuvre; it is formed with full distance, in close column, (three paces clear distance between the subdivisions,) and closed in mass, (without distance between the subdivisions.) In the manœuvres of large bodies of troops the two latter are most frequently employed.

The Austrian system of forming square, and the constant illustrations given in their tactics of the adaptation of principles to the ground, are worthy of study, and, to some extent, of imitation.

It may be remarked of the Austrian, as well as of most of the European, infantry, that men are allowed to swing the arm freely, and that the piece is much more frequently carried at a slope than at a carry.

The rifles habitually carry their pieces slung on the right shoulder, (not across the back,) the rifle behind the shoulder, and vertical, the sling passing in front, and grasped by the right hand. This appears to be the most convenient and least fatiguing manner of carrying it.

Under the new system all small arms are rifled, and have a uniform calibre and lock; the calibre is about the same as that of our own new-model rifled musket.

The barrel of the infantry musket is 37½ inches long, has four shallow grooves, and a charge of 55 grains.

The men of the rear rank have a hausse for longer distances than those of the front and centre ranks; in other respects the weapons are the same; the bayonet has four grooves; the barrel of the rifle is 28 inches long; the rear rank of the rifles carry a "tige rifle;" the rifle has a sword bayonet; the rammer is separate from the rifle, has a wooden handle, and is attached to the shoulder-belt. Thin white cross belts are used, without a waist-belt; in the rifles the belts are black. The cartridge-box contains four packages of six rounds each, and the cleaning-utensils; six additional packages are carried in the knapsack. The Tyrolese rifles use the powder-horn. Non-commissioned officers of infantry, and all the grenadiers, wear infantry sabres.

In each company 16 hatchets are carried in a leather case attached to the bayonet-scabbard belt.

Drums of brass, 12 inches high and 16 inches in diameter.

The bugle is, more properly speaking, a clarion.

No fifes are used.

Musicians have a sabre, but no fire-arms.

The pioneers carry a saw, axe, and hatchet, in the same manner as the engineer troops.

The officers have a light sabre.

The knapsack is of cowskin, with the hair left on; it is 12 inches square, and 4½ inches thick. No breast-strap is used for the knapsack; the two shoulder-straps are attached to the middle of the top of the knapsack, pass over the shoulder and under the arm to the outer ends of the bottom of the knapsack; fastened on the left side by a buckle, on the right by a ring and hook.

The infantry shako, cut of the uniform, belts, &c., are shown in the figures accompanying the description of the Austrian engineer troops. The shako is of black felt, with leather top and visor; large brass eagle in front; wooden pompon, trimmed with brass; a black water-proof cover

goes over the shako and visor; when this is put on, the pompon and eagle are removed, and put inside the shako in the top lining.

The forage cap is of light-blue cloth, of the gig-top shape; it has no visor, but two flaps of cloth, (which can be turned up,) serving as ear-covers in cold weather, and which may serve as substitutes for a visor. The men are all provided with mittens of blue cloth.

The frock-coat is of excellent thick white cloth; the buttons white and plain; coat lined with thick linen; facings and cuffs different for different regiments.

This white coat always looks well, and the officers prefer it to any other color, stating that it is very easy to keep it clean in the field, by washing and pipe-clay.

The men usually wear a vest, made of an old coat.

The pants are of light-blue cloth, with a white cord; always have pockets. The pants of the Hungarian and Croat infantry fit perfectly tight to the legs.

Gaiters of black cloth.

The shoes come well up on the ankle; the men put nails and iron heels upon them.

The stock black, with a white edge on top; it has a bottom flap.

The overcoat is of gray cloth, with a large rolling collar; it is made quite loose. All guards in garrison are provided with special overcoats for the sentinels.

The coat and pants of the rifles are of a bluish gray, cut like those of the infantry; but, instead of the shoulder-strap, there is placed at the point of the shoulder a raised crescent-shaped pad of cloth.

Their hat is of felt, turned up on both sides, and has a large black plume of cocks' feathers.

The overcoat is folded in a long roll, and strapped to the top and both sides of the knapsack. Extra shoes are tied to the sides of the knapsack.

The uniform coat is always carried in the field; no extra pants carried.

The forage cap is carried in a small pocket on the front of the knapsack.

The contents of the knapsack are: 1 pair of drawers, 1 shirt, 1 handkerchief, 1 pair of feet-wrappers, (socks not being used,) and the usual brushes, cleaning-utensils, &c.

The clothing is issued to the captains either made up, but not trimmed, or else in the form of cloth, as they may elect. The system is explained in describing the Austrian cavalry.

The distinctive marks of rank are as in the cavalry. It may be repeated that no epaulettes are worn by the infantry; even the officers are without them.

The rations and cooking-utensils are as for the cavalry; the kettle is,

however, for a mess of 14 men, and they are carried either in wagons or on pack-horses.

Each man has a "little gamelle," like those of the French, which is attached to the knapsack. Bread is carried either under the flap of the knapsack or in a linen haversack. 12 tin canteens are carried in each platoon.

Tents are not used in the field, the men being expected to construct such temporary shelters as the material at hand renders possible; in camps of instruction tents are provided. The men carry no blanket in the field, —merely the overcoat.

In quarters the bedsteads are single, and of iron; each man has a bed-sack, pillow, two blankets, and a pair of coarse sheets; all these belong to the barracks, and are in charge of the captain inspector. The bedsacks are filled every three months. During the day the bedsacks are kept down, but the blankets, &c., are folded at the head of the bed. Each man has a rack and shelf at the head of his bed. The rooms are generally dirty and filled with tobacco-smoke; those of the Polish companies were the cleanest. The men eat in their rooms. The arms and accoutrements are kept in the corridors. A part of the officers live in the barracks.

PROPRIETORS OF REGIMENTS, PROMOTION, MARRIAGE, INVALIDS, ETC.

The "proprietor" of a regiment confers his name upon it, receives about $150 per month, and nominates the officers up to the grade of captain, inclusive. He is obliged to follow the ordinary rules of appointment and promotion, but decides as to the application of those rules. Promotion always goes by seniority, provided the senior is fit for his new duties; it is in the regiment up to the grade of colonel, after that in the whole army. The senior captains and field officers are sometimes transferred to other regiments in order to equalize promotion. Colonels rank in the whole army by seniority, irrespective of corps, and are promoted according to seniority, if competent; if not, they are retired.

An officer who is retired after five years receives a certain pension; after ten years' service, a greater one; and so on for every additional five years.

Any one under the grade of general, who retires after thirty years' service, receives the full pay of his grade; a general who retires after fifty years' service receives full pay.

The various medals, decorations, &c., carry with them a certain salary, which is continued during the life of the recipient, even should he leave the service, and is given to his widow during her life; there is no other pension than this for soldiers.

There are several invalid-asylums in the empire, each for a fixed number of officers and men; the officers are furnished with quarters, fuel, and attendance. When a vacancy occurs, the oldest soldier entitled to be

retired receives the place; if a soldier is disabled by wounds, &c., he must return to his friends and await his turn for the asylum.

Retired and disabled soldiers receive the preference in all government employments, such as on railways, as orderlies in public offices, in the service of the posts, &c.

Eight years is the term of service for all arms. The men are drawn by conscription, only-sons being exempted. In 1855 and 1856 the authorized price for a substitute was about $300. A man who re-enlists, after eight years' service, may demand his discharge at any time.

Men sent home upon a reduction of the army are liable to be recalled at any time until their eight years are out; the time thus spent at home counts in the eight years, but they receive no pay while absent from their regiments.

As a general rule, the men are not permitted to marry; but a certain number of laundresses are allowed each company. Under no pretext can more than one-sixth of the officers of any regiment or special corps be married. When any officer desires to marry, he makes an application, and receives permission in his turn when the first vacancy occurs, irrespective of rank. Before he is permitted to marry, an officer must deposit in the hands of the government a certain sum, different for the various grades and corps. He receives the legal interest of this money every month.

Privates are placed on courts-martial for the trial of their peers. Not more than 100 blows can be given; the usual manner of inflicting them is on the seat, the pants being kept on. Flogging is rarely resorted to, and only with hardened characters and for heinous offences. For desertion, the penalty is flogging for the 1st and 2d offences, death for the 3d. An officer on detachment has great powers in regard to the infliction of punishment.

As far as possible, especially in time of war, offences are tried and punished within 24 hours of the arrest of the offender. Duty on courts-martial is a matter of regular detail, according to the roster.

The money for the pay, &c., of the men is drawn by the captain; he issues the ration-money every day to the first sergeant, the balance every five days. The first sergeant turns over the ration-money for each squad to its corporal, who makes the purchases; in doing this, he is always accompanied by one or two men selected by the squad.

The captain makes out the requisition for the money; this is examined and approved by the "war commissary," whose signature constitutes the order upon the military chest for the payment to the captain. The captain draws the pay of the officers on the same requisition. The commissary, who gives the order, never has charge of the money, his only duty being to examine and verify the accounts.

When a man is in the hospital his pay ceases, and he is struck off the company pay-roll, being supplied with food by the hospital.

Since the affairs of 1848 and 1849, the organization and instruction of the Austrian infantry, as well as that of the other arms of service, have been much improved. In the next war in which they are engaged the beneficial effect will no doubt be perceived. The rifles are a fine set of men, and will probably hold their own against any similar troops with whom they may be brought in contact.

THE PRUSSIAN INFANTRY.

The general organization of the regular army and the landwehr, the term of service, &c., are explained in the report upon the Prussian cavalry. The infantry consists of:

(*a*) The standing army—

	Battalions.
4 regiments of guards	12
1 reserve regiment of the guards	2
2 battalions of rifles of the guards	2
32 regiments of infantry of the line	96
8 regiments of reserve infantry	16
8 combined reserve battalions	8
8 battalions of rifles	8
	144

(*b*) The landwehr of the 1st levy—

4 landwehr regiments of the guard	12	
32 provincial landwehr regiments	96	
8 landwehr battalions of the reserve regiments	8	
	116	116
(*c*) Same for landwehr of 2d levy		116
		376

In time of war the following is the general division of the infantry:

A. INFANTRY DISPOSABLE FOR ACTIVE OPERATIONS IN THE FIELD.

(1) The guards—	
4 regiments of infantry of the guard	12
1 reserve regiment of the guards	2
2 battalions of rifles of the guards	2
(2) Infantry of the line—	
32 regiments of infantry of the line	96

8 regiments of reserve infantry, combined with their 8 battalions of the landwehr, forming 8 regiments of 3 battalions each...	24
8 battalions of rifles.....	8
	144
(3) Landwehr of the 1st levy—	
4 guard and 32 provincial regiments.....	108
Total disposable for field operations.....	252

B. DEPOT TROOPS.

(1) For each infantry brigade of 6 battalions, (formed by the union of a regiment of the standing army with the corresponding regiment of landwehr,) there is a depot battalion of 6 companies, (1 company for each battalion;) the combined reserve battalions form the nucleus of these depot battalions.....	36
(2) 10 depot companies for the 10 rifle battalions.....	2½
Total depot battalions.....	38½
(c) Landwehr of the 2d levy.....	116
Total battalions in time of war.....	406½

On the war footing each battalion numbers 1,002 men, exclusive of officers and the train.

In time of peace the strength of each company is as follows: 1 captain, 1 first lieutenant, 3 second lieutenants, 1 orderly sergeant, 1 ensign, 3 sergeants, 12 corporals, 10 lance corporals, 4 musicians, and 125 privates. In war the number of privates is increased to 219; making the strength of the company 250, exclusive of officers, and that of the battalion 1,002, including the drum major and battalion clerk.

For each battalion there are: one field officer in command, who is a lieutenant-colonel or major, a battalion adjutant, with the rank of second lieutenant, and two supernumerary captains.

On the regimental staff there are: 1 colonel, 1 regimental adjutant, 1 regimental surgeon, sometimes a supernumerary field officer, and 1 regimental clerk.

In addition, each battalion has 1 treasurer, 2 or 3 surgeons, and 1 armorer.

The regimental bands of the guards consist of 48 men; those of the regiments of the line, of only 10 men.

In time of peace the organization of army corps is according to provinces.

In war the active army forms 9 army corps, viz.: 1 of the guards and 8 of the line.

The corresponding regiments of the line and the first levy of the landwehr are brigaded together, *i.e.* the 8th regiment of the line and the 8th regiment of landwehr form 1 brigade of 6 battalions.

An army corps, on the war establishment, consists of: 2 infantry divisions, 1 cavalry division, the reserve artillery, and a division of pioneers.

(*a*) Each infantry division consists of 2 infantry brigades, 1 regiment of cavalry, and 2 foot batteries. A battalion of rifles is attached to one of the divisions.

(*b*) The cavalry division consists of 6 regiments of cavalry and 2 batteries of horse artillery. Four regiments of cavalry of the line and four regiments of landwehr cavalry compose the cavalry of an army corps. Special cavalry corps are formed only in case of necessity.

(*c*) The reserve artillery consists of 4 foot batteries and 1 horse battery; this is commanded by a field officer.

(*d*) A division of pioneers, generally with at least one ponton train, is attached to each army corps.

The order of battle of an active army corps is as follows:

Advanced guard.—One infantry brigade, (6 battalions,) 1 cavalry regiment, and 8 guns.

Main body.—One infantry division, (12 battalions;) 1 cavalry regiment, and 21 guns.

Reserve.—One infantry brigade, (6 battalions,) 1 rifle battalion, and 8 guns; the cavalry division, (24 squadrons,) the reserve artillery, 6 batteries, (48 guns,) the pioneer division.

Total of an army corps:	Men.
25 battalions	25,000
32 squadrons	4,800
88 guns	2,000
1 division of pioneers	500
	32,300

The nine army corps consist of 226 battalions, 228 squadrons, 792 guns, and about 4,500 of the technical troops.

The military staff of an active army corps consists of:

(*a*) The general commanding. General staff: 1 general as chief, 1 field officer, 1 captain. Aides-de-camp: 1 captain of infantry, 1 captain of cavalry, 2 lieutenants. Engineers: 1 field officer and 1 captain.

(*b*) Two generals commanding the infantry divisions, one general commanding the cavalry division. General staff: in each division, 1

field officer, or 1 captain. Aides-de-camp: in each infantry division, 1 captain of infantry and 1 lieutenant; in each cavalry division, 1 captain of cavalry and 1 lieutenant.

(*c*) Four brigadier-generals of infantry, two brigadier-generals of cavalry.

Each general of brigade has 1 lieutenant as aide-de-camp.

A permanent guard for head-quarters is detailed from the reserve squadrons and battalions of the landwehr, and consists of 1 officer, 5 non-commissioned officers, and 37 privates of cavalry, 10 non-commissioned officers and 42 privates of infantry.

The administration of an active army corps consists of:

(*a*) The intendancy, comprising the intendancy of the corps, and, under it, one section of the intendancy for each division, and one for the artillery reserve.

(*b*) The military chest of the corps, with four 6-horse wagons.

(*c*) The commissariat officers, consisting of 1 chief commissary and 1 commissary for each of the 3 divisions and the reserve artillery, as well as 1 in charge of the bakeries.

(*d*) The provision trains, organized as a battalion, and comprising: 1. The staff of the train battalion, with one 2-horse wagon. 2. Five provision columns, consisting of five 6-horse wagons and one hundred and fifty-five 4-horse wagons. 3. A field bakery column, with five 4-horse wagons. 4. A horse depot with seventy-five spare horses, and a 2-horse wagon for papers.

(*e*) The field hospital, consisting of: 1. A main field hospital for 1,200 invalids. 2. Three flying hospitals, each for 200 invalids.

(*f*) The military post-office, consisting of: 1. One postmaster. 2. A post-office for each of the three divisions and the artillery reserve.

Total number of wagons of the administration from *a* to *f*—

9	6-horse wagons.
204	4-horse wagons.
41	2-horse wagons.
Total..... 254	wagons.

(*g*) The chief surgeon of the corps.

(*h*) The judge advocate's department, consisting of: 1. A judge advocate for the corps. 2. Six judges advocate of division, *i.e.* one for each infantry brigade, one for the cavalry division, and one for the artillery reserve.

(*i*) Seven chaplains, *i.e.* one for each infantry brigade, one for the cavalry division, one for the artillery reserve, and one for the hospitals.

The allowance for the transportation of baggage, &c., is as follows:
A. A battalion of infantry is provided with—

1. *One 4-horse wagon for officers' baggage.*

	Pounds.
(*a*) Adjutant's desk	40
(*b*) Mess-chest of field officers	40
(*c*) 22 officers' portmanteaus, at 61 pounds, and 1 at 102 pounds..	1,444
(*d*) Armorer's tools	225
(*e*) Surgeon's baggage and instruments	60
Total weight	1,809

2. *One 4-horse equipment wagon.*

(*a*) Money-chest	306
(*b*) Treasurer's books, &c	40
(*c*) Spare articles of equipment, shoemakers' and tailors' tools, &c.	1,305
(*d*) Surgeon's baggage and instruments	60
Total weight	1,711

3. *One 2-horse medicine cart,*

(*a*) Surgeon's baggage, *i.e.* 60 pounds for portmanteau of the battalion surgeon, and 40 pounds for medical books	100
(*b*) Chests of medicines, bandages, &c	257
Total weight	357

4. *Four company pack-animals, each carrying—*

(*a*) Mess-chest of company officers	60
(*b*) Blankets for sick men	45
(*c*) Overcoats of the four lieutenants	18½
(*d*) Baggage of the orderly sergeant	20
(*e*) Money, &c., when on detachment	50
Total load of each animal	193½

The captains carry their overcoats on their own horses.

The normal load of a 4-horse wagon is	1,836
The normal load of a 2-horse wagon is	816
The normal load of a pack-animal is	204

Exclusive of cleaning-utensils, forage, &c.

B. A battalion of rifles is provided with—

One 2-horse equipment wagon.

	Pounds.
Money-chest	306
Treasurer's books, &c.	40
Adjutant's desk	40
Officers' portmanteaus	225
Armorer's tools	180
Total weight	791

One 2-horse medicine cart, as for the infantry battalions.

Each company has 4 pack-animals, on which it packs—

Officers' mess-chest	60
Officers' portmanteaus	310
Spare equipments, &c.	250
Blankets for sick men	45
Overcoats of officers	18½
Baggage of orderly sergeant	20
Baggage of surgeons, hospital attendants, &c.	60
Total load of the 4 pack-animals of a company	763½

Tactics, instruction, &c.—The rifles are formed in 2 ranks, all other infantry in 3 ranks. The largest men are in the front rank, the most active men and best shots in the third rank; these men being habitually employed as skirmishers. The distance between the ranks is 2′, measured from the back of the front rank to the breast of the next rank. The company is divided into 2 platoons; platoons of 20 files and upwards into half platoons; the latter into sections. Platoons of less than 20 files are divided only into sections. The section consists of not more than 6 nor less than 4 files. In a detached company the officers, &c., are posted as follows: the captain at one-third platoon distance in front of the centre; the 1st lieutenant commands the 2d platoon, and is posted on its right in the front rank; the senior 2d lieutenant commands the 1st platoon, and is posted on its right in the front rank; the next 2d lieutenant is on the left of the 2d platoon, in the front rank; the junior 2d lieutenant is 4 paces in rear of the centre of the 1st platoon; the orderly sergeant is in the rank of file-closers, (2 paces behind the rear rank,) in rear of the 2d file from the right of the company; the right guides of the platoons are in the rear rank; the left guides in the rank of file-closers, behind the 2d files from the left of their platoons; the remainder of the non-commissioned officers are at equal intervals in the rank of file-closers; the field music, 12 paces in rear of the centre of the company, except on

parade, when they are 2 paces from the right of the company, on the alignment of the centre rank.

In a *battalion* the platoons are numbered from 1 to 8, in a regular series from right to left.

The color-guard, consisting of the color-bearer, who is a non-commissioned officer, and 5 color-corporals, is posted between the 4th and 5th platoons.

The commander of the battalion, with a musician, is posted at company distance in front of the centre; the adjutant, 12 paces in rear of the centre.

Each captain commands the 1st platoon of his own company, and is posted in the front rank on its right; the 1st lieutenants are posted as explained for a detached company; the 2d lieutenant of the 4th company is on the left of the front rank of the battalion; all the other 2d lieutenants are in the rank of commissioned file-closers, (4 paces behind the rear rank,) in rear of their respective platoons; the non-commissioned officers are posted as prescribed for a detached company.

All the field music of the battalion is united, and posted 4 paces on the left of the adjutant; the band is 4 paces on his right. On parade, all the music is on the right of the battalion. The length of step is 29″; the rate of march, 108 steps per minute, except in the bayonet charge, when it is 120. The march is steady, but strikes one as being stiff and awkward; for the foot is raised very high, the toe much pointed, the knee much stiffened, and the foot brought down with a shock; the noise thus made by a column is something quite extraordinary.

The manual of arms presents nothing peculiar beyond the fact of bayonets never being unfixed, and the method of loading the needle gun. The piece is very generally carried at a slope arms, or a sergeant's carry.

The minimum of target-practice is, that each man must fire one shot every week; but this minimum is far exceeded.

The individual carriage and instruction of the Prussian infantry are excellent.

The formation into "company columns"—*i.e.* forming a third platoon of the men of the third rank, for skirmishing and light infantry service—is employed, and does not differ in any essential particular from the system explained in the report upon the Russian infantry.

The chain of skirmishers consists of pairs of men. The system is full and good, but presents nothing peculiar.

The movements of a battalion, its formation in column, &c., are habitually by platoon.

The battalion advancing in line, at the command "prepare to charge," the battalion at once takes the gait of 120 steps per minute, the colors fall back into the front rank, the commander rides to the rear; at 12

paces from the enemy he gives the command "charge bayonets—charge," on which the front and centre ranks bring down their pieces, and all charge with the "hurrah."

In the close column the distance between subdivisions is 4′, measured from the front rank of one subdivision to the rear rank of the one next in front of it.

The double column on the centre platoons is the column of attack, and the habitual column of manœuvre. In this the distances are as in close column, except that two paces clear distance is left between the second and third subdivisions; the music is in this distance.

Square is formed from the double column on the centre. At the command "form square," the 3d and 6th platoons close up to 2′ from the 4th and 5th, the 1st and 8th do the same with regard to the 2d and 7th; the 4 rear platoons face about; the color-bearer retires to the centre of the square; the three outer flank files of the 2d, 3d, 6th, and 7th platoons face outwards, these short sides of the square being completed by officers, non-commissioned officers, and men of the rear rank of the central platoons, formed 3 deep; in the same manner the intervals between the 4th and 5th, the 1st and 8th, platoons are filled. If either of the short sides is attacked, then the 3 flank files of the head and rear of the square, on that side, face in that direction.

The square being formed, the command "square—ready!" is given; upon this the front-rank men of all the faces charge bayonets, the 2d and 3d ranks come to a ready.

The firing is usually by volleys, of one rank at a time; no rank fires without the special order of the commander.

The interval between consecutive battalions is 20 paces.

A brigade is formed in two or more lines, the usual distance being 150 paces.

It is worthy of remark that the Prussian Infantry Tactics, from the school of the recruit to that of the brigade, inclusive, form only one small volume of 228 pages.

ARMS AND ACCOUTREMENTS.

All the regiments of the guards, and at least one battalion of every regiment of the line, are armed with the "needle gun," (zündnadelgurche;) the rest of the infantry of the line have the percussion musket; the rifles of the guard have a "needle rifle," (zündnadelbüchsen;) the rifles of the line have the tige rifle.

The needle gun is rifled, and loads at the breech. An aperture exists in the upper surface of the barrel, near the breech; this is opened and the cartridge slipped in horizontally. In the cartridge, near the base of the ball, there is a pellet of fulminating powder; behind the cartridge

there is a long sharp needle in the axis of the barrel; this is connected with a spiral spring. Upon pulling the trigger the spring is liberated, and drives the needle through the cartridge into the fulminating compound.

The target-practice with the needle gun is carried up to 1,000 paces, and seven shots per minute can be fired.

There is no other belt than a waist-belt; to this the sabre and cartridge boxes are attached. There is no bayonet-scabbard, the bayonet never being unfixed, except in the case of the rifles, who have a sword bayonet.

The cartridge-boxes hold 20 rounds each, and are $6'' \times 3'' \times 2''$; in the field each man carries two, in front of the body, and on each side of the belt-plate; in garrison but one is carried, and that in front of the middle of the body. The cap-pouch is on the front of the box, under the flap. Two tin boxes, ($2\frac{3}{8}'' \times 1'' \times \frac{3}{8}''$,) each containing forty caps, are carried in the knapsack.

In each company one man carries on his waist-belt two boxes ($6\frac{1}{2}'' \times 4'' \times 3''$) containing medicines in vials; this man carries no musket, and is under the direction of the surgeon. Patterns of these boxes were obtained by the commission, and are in possession of the War Department. Each soldier carries a small supply of lint in his knapsack.

The knapsack is of cowskin, and as shown in the preceding figures.

The overcoat is either strapped to the top and sides of the knapsack, as explained for the Austrian infantry, or is rolled in its full length, the ends fastened together by a strap, and the whole thrown over one shoulder, crossing the back, and passing under the other arm.

Of the four musicians, two are drummers and two fifers; each fifer has also a bugle.

The drums are 18″ in diameter and 4″ deep,—including the rims, 6′ deep. Each drummer has a leather apron on his left thigh.

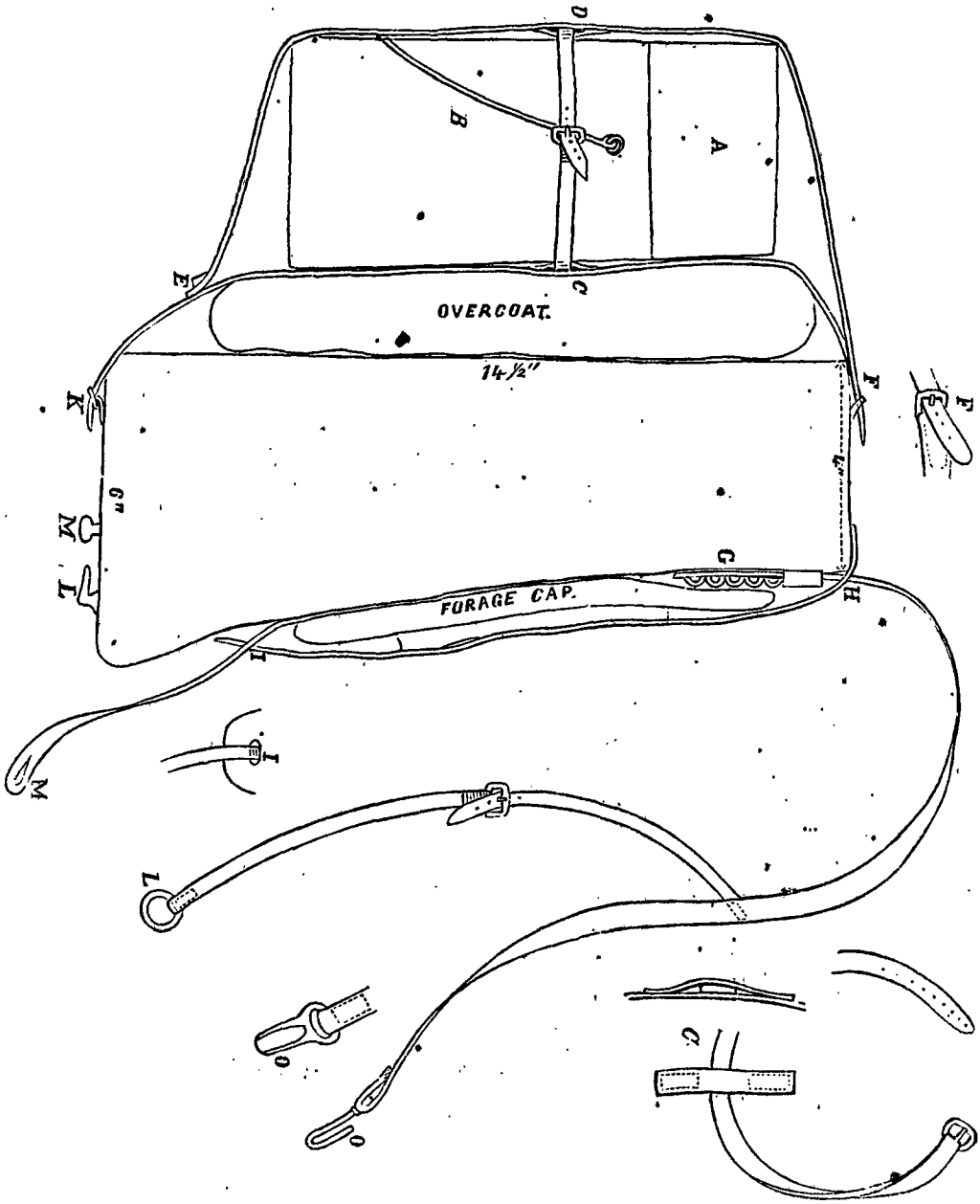
UNIFORM.

The uniform of the officers differs but little from that of the Russians, except in color.

The helmet is worn by all the infantry, except the rifles, whose headdress is like that of the Austrian rifles. The frock-coat is universally worn; for the infantry it is dark blue, for the rifles green; the distinctions of army corps, regiments, grade, &c., are found on the collars and cuffs; the sword-knot is also a distinction of grade, and of companies in the same battalion. The overcoat is of dark gray, without cape, and with a standing collar. The shoulder-straps on the frock-coats and overcoats of the men are of the Russian pattern.

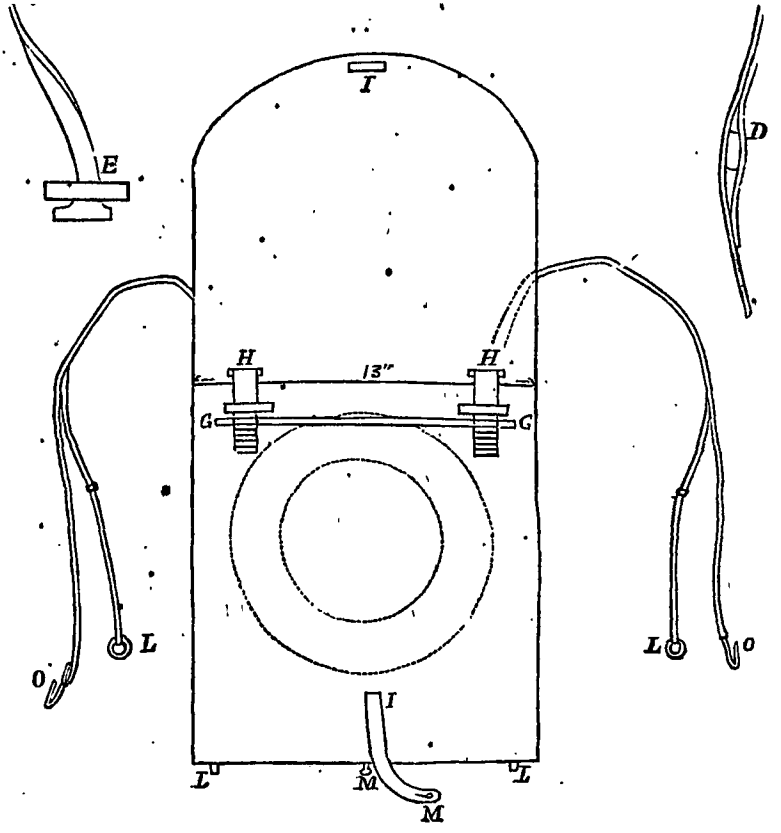
The material of the clothing is very good, and it is well made up. Each man has a pair of cloth mittens and a pair of ear-covers.

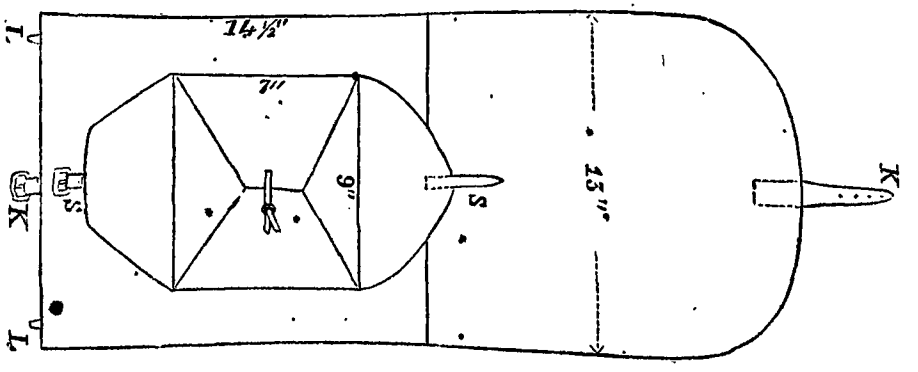
Prussian Knapsack.



The hooks O hook to the inside belt. G is an iron pin, by means of which the shoulder-straps may be lengthened or shortened. A B is the camp-kettle.

Prussian Knapsack.





The contents of the knapsack are: 1 pair of cloth pants, 1 overcoat, 1 forage cap, 1 pair of shoes, 1 pair of extra soles, 1 shirt, 1 pair of drawers, brushes, shaving-materials, and 20 rounds of cartridges; weight of the whole about 20 pounds. The whole load of the men, including arms, accoutrements, ammunition, &c., &c., is somewhat less than 60 pounds. All other essential points in relation to the clothing are given in the report upon the Prussian cavalry.

RATIONS.

The rations, cooking-utensils, &c., are the same as in the cavalry. The bread used by infantry and cavalry alike in this service is the brown or "black" rye bread of Germany.

The haversacks are of linen, and are 12″ square; no canteen is carried; instead of it, a small flask of brandy in the haversack.

QUARTERS.

In quarters the men are divided into squads of from 18 to 20 men, each under a corporal.

As a general rule, each squad has two rooms, in one of which all the beds are stowed during the day, the other being used for eating, reading, lounging, smoking, &c. This room is provided with tables and benches; at night some of the beds are placed in this second room.

The bedsteads are single and of iron, put together with nuts and screws; the tops of the corner posts are hollowed out, so that the feet of another bedstead may be set in them in the daytime, thus placing one above another to save space.

The bottom or floor of the bed consists of boards, placed longitudinally on the cross-pieces; an inclined board at the head of the bed renders a thin pillow sufficient.

The bedding consists of a pillow, bedsack stuffed with straw, and a pair of blankets in a check case; the bedding is not folded up during the day. The bedding belongs to the barrack. Each man has a cupboard, with a lock and key, in which he keeps his rations and effects.

In the room is a list of the men quartered there, with the name of the orderly; also an inventory of all public property in the quarters.

On the outside of the door, which is numbered, is a board or paper, inscribed, *e.g.*, as follows:—

2d battalion.
10th infantry regiment.
8th company.
5th squad.

The inspector of each barrack is a retired non-commissioned officer; he is responsible for the furniture, bedding, &c., of the officers and men

living in that barrack, and reports to the inspector of the post, who is a retired officer; the latter is under the orders of the intendant. Tables, sofas, chairs, bureaus, bedsteads, and bedding, are furnished to every officer; they paper their own quarters, and paint them if the ordinary government allowance is not sufficient.

FIELD SERVICE.

The organization of an army corps in the field, and its allowance of transportation, have already been given.

Each captain of infantry is allowed a horse; he is only permitted to ride on the march; no lieutenant is, under any circumstances, permitted to ride.

The ordinary march is 14 miles in five hours, sometimes 23½ miles in eight hours. Usually a short halt is made about fifteen minutes after starting, and in the middle of the march a halt of about an hour; if the march is a very long one, (more than 20 miles, for instance,) two halts of an hour each are made. On the march the piece is carried at will, on either shoulder. No tents or shelter tents are used; the men hut themselves as best they can.

The normal camp of a regiment is in six rows of huts, perpendicular to the front of the camp; two companies being in each row, and there being one street for each battalion.

Each platoon has its stacks of arms at the head of its row of huts; the huts of the officers are in the middle of those of the men of their companies, in the same row.

The latrines are in rear of the whole camp.

The bivouac is essentially the same as the Russian.

In regard to the landwehr, it is worthy of mention, that in the landwehr arsenals complete sets of clothing, arms, and accoutrements are kept on hand, so that a few minutes will suffice to supply the men, who are already drilled. A close study of the landwehr system is well worthy of the attention of our own officers; the adoption of some similar system would go far towards rendering our own country unassailable.

I desire to call the attention of our officers to the rich and interesting field of study offered by the Prussian military works; any one who will provide our service and the country with such valuable aids as "Witzleben, Mims, Kalkstein, Scharnhorst," &c., will at least have the satisfaction of knowing that he has conferred incalculable benefit upon the service.

THE SARDINIAN INFANTRY.

This consists of 20 regiments of infantry and 10 battalions of bersaglieri, (rifles.)

Each regiment of infantry has 4 battalions, of 4 companies each; the staff of a regiment consists of 1 colonel, 4 majors, 2 adjutants, 1 paymaster, 1 clothing officer, 1 chaplain, 3 surgeons, 2 staff quartermasters, 1 drum major, 1 quartermaster, and 3 sergeants of the train; 3 corporals, 4 battalion clerks, 3 battalion drummers, 1 chief trumpeter, 1 master carpenter, 1 band-master, 2 armorers, 1 master tailor, 1 master shoemaker, 26 musicians, 8 carpenters, and 2 sutlers.

Each company of infantry consists of 1 captain, 2 lieutenants, 1 orderly sergeant, 4 sergeants, 9 corporals, 2 drummers, 8 lance corporals; in time of peace 52, and on the war establishment 126, privates.

The corps of rifles consists of 10 battalions and 1 depot company, each battalion having 4 companies.

The staff of the corps consists of 1 colonel, 1 lieutenant-colonel, 10 majors, 1 intendant, 1 clothing officer, (a captain,) 1 paymaster, 1 subintendant, 1 quartermaster, 2 lieutenants, 1 regimental adjutant, 10 battalion adjutants, 10 surgeons, and 3 lieutenants for the depot company. Each company consists of 1 captain, 2 lieutenants, 1 orderly sergeant, 4 sergeants, 1 trumpeter, 11 corporals, 76 privates in time of peace, and 133 in time of war. The depot company has but 1 orderly sergeant, 2 sergeants, 5 corporals, and 30 privates.

The non-commissioned staff of the rifle corps consists of 10 battalion quartermasters, 1 quartermaster and 14 sergeants of the train, 11 chief trumpeters, 11 battalion clerks, 4 corporals of the train, 1 master armorer, 1 master tailor, 1 master shoemaker, 10 armorers, and 10 sutlers.

The army is filled by conscription.

The term of service for the infantry and rifles is 16 years, during 8 of which the men belong to the active army, and for 8 years to the reserve. They serve but 14 months with their regiments in time of peace, and are then sent on furlough, being liable to be called out again if needed. The term of service for the cavalry, artillery, and engineers, is 8 years' uninterrupted service; these corps are filled with volunteers, substitutes, and men drawn by lot from the mass of the conscripts.

The Sardinian contingent in the Crimea was composed of provisional regiments of 2 battalions each; these were formed by detailing a company from every battalion of the infantry, and composed 2 divisions of 4 regiments, and a reserve brigade. Two companies of every battalion of bersaglieri were present, forming 5 provisional battalions.

The tactics and instruction of the Sardinian infantry differ but little from that of the French, from which they are derived.

UNIFORM.

This is a modification of the French, and is strikingly similar to our own. The infantry shako is almost identically ours.

The frock-coat is dark blue.

The pants and overcoats are very nearly the color of our own, but of a somewhat more grayish hue.

The overcoat alone was worn in the Crimea, the frock-coat being left at home; the overcoat has a large rolling collar, but no cape. Shoes and gaiters are used.

The knapsack is of black leather, and is 15″ × 12″ × 3¼″; it is not attached to the waist-belt, but has straps after the Austrian fashion.

The knapsack contained 1 linen coat, 1 pair of linen pants, 1 woolen shirt, 1 linen shirt, 1 pair of drawers, 1 pair of shoes, 1 pair of leather gaiters, 1 stock or scarf, and the brushes; a plaid blanket is strapped to the top and sides of the knapsack; the shelter tent is attached to the front of the knapsack.

The forage cap is of wool, and something between the Greek cap and the Turkish fez; it is what is known as the Italian fisherman's cap, and has no visor.

The hat of the bersaglieri is of felt, with a flat rim 3″ broad; the rim is stiff, and covered with oiled linen; the crown is round; there is a plume of black cocks' feathers.

Their pants are dark blue, as well as their overcoats.

ARMS AND ACCOUTREMENTS.

Twenty men in each company of infantry have the bersaglieri rifle, the rest have the ordinary percussion musket, using the Nessler ball.

The bersaglieri rifle has a 30″ barrel, and is quite heavy; it has 8 grooves, an elevating hausse, and sword bayonet. The beak of the butt-plate has a spiked projection some 5″ or 6″ long, to assist the men in climbing hills, &c.

The range of this rifle is about 600 metres.

The screw-driver is of the shape of a T; at the end of one branch is a gimlet, so that the screw-driver may be screwed into a tree to afford a rest.

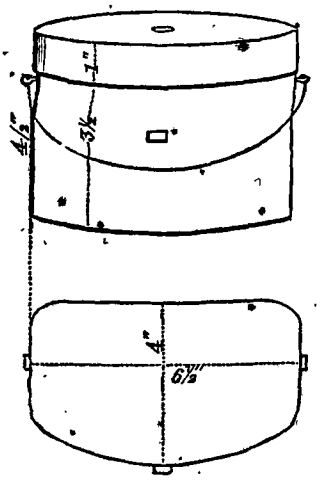
The infantry cartridge-box contains 30 rounds, and is attached to the waist-belt by a loop of sheet iron; the bayonet-scabbard is also attached to the waist-belt; the infantry wear no sabre.

The box of the bersaglieri contains only *balls* and cleaning-utensils, neither cartridges nor patches being used; the powder is carried in a rough wooden powder-horn, suspended by a green cord, and thrust into a pocket of the coat.

There is a separate waist-belt for the sword bayonet of the bersaglieri.

COOKING-UTENSILS.

For every mess of 16 men there is a sheet-iron camp-kettle with a flat cover, and strong iron handle; it is 12″ deep, 11″ in diameter at top, and 10″ in diameter at bottom. Frying-pans are also used.



Each man has a mess-can, (little gamelle,) of the annexed shape and dimensions; by the infantry it is carried strapped on top of the knapsack.

The haversack is of linen, lined with muslin; it is slung over the shoulder by a leather strap, and contains 3 days' rations.

The canteen is of wood, made of staves and hoops; it is 6½″ high, 4½″ × 3½″ at bottom, and 4″ × 3″ at top; the side which rests against the body is somewhat flattened, so that the bottom and top of the canteen are ellipses flattened on one side; the opening is in the middle of the top, and is closed by a screw plug of hard wood.

CAMP EQUIPAGE, ETC.

The tents are conical: they are 7′ 6″ high, and 16′ 8″ in diameter at the bottom.

The men are all provided with shelter tents, which are the same as those described in the report upon the French cavalry.

In the Crimea the men were all hutted.

Each hut was for 6 men; a cellar 3′ deep, 7′ 4″ wide, and 14′ 8″ long was first excavated, with steps leading down to it in front; the frame of the roof was formed by rafters, making an angle of 90° with each other; over these and at the ends hurdles were placed, which were then covered with a thick plaster of clay and straw; a window was left in one end and a door in the other. In each hut there was a small fireplace on one side, excavated in the side of the cellar, the chimney passing under the eaves.

The bunks were made of hurdles; shelves, racks, &c., were placed according to the fancy of the inmates.

The roof projected well beyond the gable ends.

The organization, discipline, instruction, and personal appearance of the Sardinian infantry are excellent: they may be regarded as among the best troops of Europe.

THE RUSSIAN ARMY.

CHAPTER I.

ORGANIZATION, UNIFORM, RECRUITING, RATIONS, ETC., OF THE RUSSIAN ARMY.

INTRODUCTION.

It will be seen from the following that the main regular army of Russia, the grand active army of operations, presents at least one most important and striking feature, viz.: that it is organized solely with a view to great military considerations, entirely untrammelled by the necessities of interior police service in time of peace. Its organization in army corps, divisions, &c., is uniformly kept up during peace; it is located solely with reference to operations in foreign countries or on the frontiers, and is maintained in constant readiness for the field. It may, therefore, fairly be regarded as embodying the Russian conception of the perfect organization of large masses for active operations.

The vast experience of the Russians in wars, conducted alike upon the grandest and most limited scale,—at one time carried on by great masses on the level and unobstructed plains of Europe, at another by small detachments in the rugged mountains of Caucasus and Asia Minor, or on the frontiers of Tartary and China; the great perfection to which military science has been carried in the schools and special corps; the intelligence, skill, and courage they have so often evinced, both in attack and defence,—all these considerations render a detailed study of the Russian system of war both profitable and interesting.

In addition, there is, perhaps, no European service of which so little is known by the officers of our army as the Russian. In this report I have given the organization somewhat in detail,—probably too much so to interest a mere cursory reader, and not sufficiently to satisfy the student of his profession; but the time and means of information at my disposal permit no more. In reference to the army of the Caucasus, the composition of which is briefly given, it should be borne in mind that the Caucasus is a very rugged mountain region with valleys interspersed;

that hostilities there are now almost entirely confined to the most difficult portions; that mountain chains form a great part of its boundaries on the sides of Turkey and Persia; and that, in the event of an offensive war, after having crossed these mountains, the opponents of the Russians would consist mostly of irregular cavalry and indifferent infantry. These considerations will explain the almost entire absence of regular cavalry in that army. It is probable, however, that, in the event of a Persian war, some regular cavalry would be added to this army. During the Persian campaigns of 1826 and 1827 a division (four regiments) of lancers were with the army.

The system of warfare adopted in the Caucasus is to cut off the low and settled regions from the inroads of the mountaineers by Cossack settlements and posts of regulars; to construct roads and bridges through the mountains, occupying the passes and other important points by mountain forts with small garrisons, and, using these forts as depots, to send out small movable columns of infantry and irregular cavalry into the heart of the hostile region.

The information contained in this report is derived from personal observation, information obtained from Russian officers, the official regulations and tactics, Haxthausen on the Institutions of Russia, Hirtenfeld's Organization of European Armies, the narrative of the campaigns of Paskivitch in Asia Minor in 1828 and 1829, and from other sources. Errors have probably been committed, but it is believed that the true spirit of the organization is given.

COMPOSITION OF THE RUSSIAN ARMY.

At the commencement of the Crimean war, the army of Russia was composed and organized about as follows:

The emperor is the commander-in-chief of all the forces, by sea and land.

GRAND STAFF OF THE EMPEROR.

Its members, in time of peace, participate in the duties of the war department, as presidents of committees, &c. It consists of: the minister of war; the inspector-general of the various corps of engineers; the inspector-general of artillery; the inspector-general of cavalry; the inspector-general of infantry; the inspector of the military engineers; the inspector of artillery; the chief of the general staff; the inspector-general of the army; the commandant of the imperial head-quarters; the subcommandant of the same; the baggage-master general; the inspector-general of the medical department; the chaplain-general.

THE GENERAL AIDES-DE-CAMP.

This is merely an honorary title bestowed upon distinguished general

officers, but involving no especial duty. There are some eighty general officers in this category.

THE AIDES-DE-CAMP OF THE EMPEROR

consist of about four major-generals, "in the suite;" some thirty field officers, and fifteen captains; the number is not limited. These are the real aides-de-camp of the emperor.

THE WAR MINISTRY.

This is divided into *the office of the minister of war* and *the departments*.

(*a.*) The first consists of—

1. The military council of legislation and administration.
2. The office proper, in six sections.
3. The committee of general judge advocates.
4. The committee of military censorship.
5. The scientific-military committee.
6. The medical committee.

(*b.*) The departments. Of these, there are nine, subdivided into several sections, each department having one director, one vice-director, and a council of administration.

1. The department of the grand general staff, under the chief of the general staff; in addition to the usual functions of the general staff, all matters pertaining to organization and tactics are referred to this department.
2. The department of the *personnel*, under the inspector-general of the army; this has charge of the recruiting service, the central military printing-establishment, and the corps of mounted orderlies and couriers.
3. The artillery department.
4. The engineer department.
5. The commissariat department, for the supply of money for all purposes, the equipment of the troops, supplies of ammunition, and the administration of the military hospitals, under the commissary-general.
6. The subsistence department.
7. The department of the military colonies.
8. The medical department.
9. The judge advocates' department.

Under the direction of the war ministry the military authorities of the different provinces administer their military affairs; the commands of the infantry, cavalry, and independent corps are under the war ministry.

THE ARMY.

This is divided into the main army of operations, reserves, garrison troops, irregular troops, gendarmerie, model regiments, and military schools.

THE MAIN ARMY OF OPERATIONS.

This is composed of troops who have not completed their first term of service.

THE GENERAL STAFF

is divided into the general staff proper and the topographical corps. The chief of the general staff is at the head of this administration, and under him a chief of the topographical corps.

The strength of the general staff proper is 17 general officers, 32 colonels, 48 lieutenant-colonels, 62 captains, and 78 lieutenants.

It is subdivided into the *grand general staff* and *that of the troops.*

The first consists of 9 general officers, 36 field and company officers, and is divided into three sections:

1. The affairs of the *personnel* of the general staff.
2. The distribution of troops, including military operations and foreign armies.
3. Scientific section, including historical matters.

The office of the chief of general staff is for the administration.

The general staff of the troops is as follows: in each army corps, 1 general as chief of staff, 2 field and several company officers; in each division, 2 officers.

The military colonies, reserve troops, and garrison troops, have special general staffs of their own.

TOPOGRAPHICAL CORPS.

This consists of 1 general as chief, 2 generals, 15 field officers, 91 captains and lieutenants, and 8 companies of different strength, but amounting to 456 sergeants and privates, in all. The officers take rank with those of the general staff.

The corps is subdivided into the topographical depot, the topographical companies, and the officers serving on the staff with armies, &c.

The depot is subordinate to the grand general staff, and attends to the engraving and printing of maps, manufacture and repair of instruments, &c. It consists of 6 sections: 1, the office; 2, topographical section; 3, astronomical section; 4, section of engraving and printing; 5, mechanical section; 6, archives.

There are attached to the depot 1 company (of 1 officer and 120 men) composed of mechanics, and a topographical school.

Of the 8 companies, 1 is at the depot, as above, some employed in making surveys, the rest in fractions at the head-quarters of armies and corps. These companies are usually recruited from among intelligent cantonists, (soldiers' sons,) taken at the age of 15.

AIDES-DE-CAMP.

These do not form a separate corps; they are of two kinds: those of the emperor, as above, and those of the generals.

The latter are of two classes: *senior aides* and *personal aides.*

The senior aides are appointed by the emperor, and belong to the command; they superintend the service. The personal aides are selected by the generals, and accompany them when they change commands.

All aides are taken from among officers serving with troops, never from the general staff.

On the staff of an army there are, under the inspector-general, who is subordinate to the chief of staff, 5 senior and from 6 to 11 personal aides.

On the staff of a corps, also under the inspector-general of the corps, who is subordinate to the chief of staff, there are 2 senior and from 3 to 4 personal aides.

On the staff of a division there are 1 senior and 2 personal aides.

On the staff of a brigade, 1 personal aide.

THE INFANTRY.

This is divided into infantry of the line, light infantry, and rifles. The number of regiments is as follows: 12 of the guard, 10 grenadier, 4 carbineer, 42 of the line, and 42 light. There are also the following independent battalions: 1 Finland rifles of the guard, 1 of grenadier rifles, and 7 rifles of the line.

The different kinds of regiments just mentioned are numbered in separate series; in addition to its number, each has a name,—generally that of some province or city. Many regiments bear also the names of their *proprietors*, who are the grand dukes, native or foreign princes, distinguished generals, &c. Each regiment of the guard, grenadiers, and carbineers, consists of three active battalions; each regiment of the line and of light infantry has four active battalions. Every battalion is composed of four companies.

On the war establishment, every company consists of 4 officers, 20 sergeants, 8 musicians, and, for the guards, grenadiers, and carbineers, 236 corporals and privates; for other troops, 230 corporals and privates.

The battalion staff consists of: 1 commandant of the battalion, 1 junior field officer, 1 adjutant, 1 ensign, and 1 sub-ensign, (both sergeants in the line of promotion,) 1 battalion chief drummer, 1 battalion chief bugler; in the rifle battalion there is no junior field officer or battalion chief drummer, but there are 1 quartermaster and 1 paymaster.

The staff of a regiment of the line, or light infantry, consists of: 1 colonel, 1 adjutant, 1 quartermaster, 1 paymaster, 1 band-master, 40

musicians, 1 regimental chief drummer, 1 regimental chief bugler; the regiments of guards, grenadiers, and carbineers have, in addition the commander of the regiment, (who is a major-general,) 1 colonel, and 50 musicians instead of 40.

The strength of a battalion of the line or light infantry is, then, 1,055 combatants.

The strength of a battalion of guards, grenadiers, or carbineers, is 1,079 combatants.

The strength of a regiment of 4 battalions (line or light infantry) is 4,267 combatants.

The strength of a regiment of 3 battalions (guard, grenadiers, &c.) is 3,294 combatants.

To each regiment there belongs a company of the train, which comprises the teamsters, mechanics, (except tailors and shoemakers,) hospital attendants, and officers' servants. In a regiment of the line the company of the train consists of: 1 officer, 7 sergeants, 280 corporals and privates, 280 horses, and 71 wagons and carts; these men are not included in the force of combatants as given above.

These companies of the train form the train battalion of the division; every independent battalion has a company or section of the train. Attached to each regiment are a surgeon and several assistants.

The regiments of infantry are permanently organized into brigades, divisions, and army corps; 2 regiments form a brigade, 2 brigades a division, 3 divisions (with the proper proportion of the other arms of service) a corps.

THE CAVALRY.

This consists of cuirassiers, dragoons, lancers, hussars, and Cossacks. The number of regiments is as follows: cavalry of the guard—cuirassiers 4, dragoons 2, lancers 2, hussars 2, Cossacks 2, and 5½ independent squadrons; cavalry of the army—cuirassiers 8, dragoons 9, lancers 20, and hussars 16.

The regiments are named and numbered in a similar manner to the infantry.

All the cuirassier regiments, and all the cavalry of the guard, have six active squadrons per regiment; the dragoons of the line have ten active squadrons per regiment; all the rest of the regiments, except two of lancers and two of hussars, (forming the reserve light cavalry division,) have eight active squadrons.

On the war establishment, the full strength of each squadron is, 6 officers, 16 sergeants, 3 trumpeters, 146 corporals and privates; there are also, usually, an assistant veterinary surgeon and a horse-shoer.

The staff of a regiment of six squadrons consists of: 1 colonel, 3 field

officers, (one to command each division of two squadrons,) 1 adjutant, 1 quartermaster, 1 paymaster, 1 chief veterinary surgeon, and 1 regimental trumpeter: in a regiment of eight squadrons there is one additional field officer, to command the 4th division.

The dragoons of the line have each five divisions, of which the first four (having two trumpeters and two drummers to each squadron) are stronger by two musicians, each, than the divisions of other cavalry; the 5th division is as other cavalry. The staff of a dragoon regiment has one field officer more than a regiment of eight squadrons, and also a regimental drummer.

The strength of a regiment of 6 squadrons is, thus, 1,034 combatants.

" " 8 " 1,377 "

" " 10 " 1,729 "

Two regiments of cavalry, usually of the same kind, form a brigade; two brigades, of different kinds, form a division; two or more divisions form a cavalry corps.

ARTILLERY.

There are batteries of position, or heavy foot batteries, light foot batteries, heavy and light horse batteries, and mountain batteries.

A battery consists of 8 or 12 pieces, and is usually commanded by a field officer. Each battery has its own section of the train.

A heavy foot battery consists of six 12-pounder guns, six 28-pounder licornes, 7 officers, 312 men, and 241 horses; or of four 12-pounder guns, four 28-pounder licornes, 7 officers, 222 men, and 177 horses.

A light foot battery: six 6-pounder guns, six 14-pounder licornes, 7 officers, 246 men, and 167 horses; or of four 6-pounder guns, four 14-pounder licornes, 7 officers, 172 men, and 128 horses.

A heavy horse battery: eight 28-pounder licornes, 8 officers, 282 men, and 374 horses.

A light horse battery: four 6-pounder guns, four 14-pounder licornes, 7 officers, 219 men, and 284 horses.

A Cossack battery: four 6-pounder guns, four 14-pounder licornes, 5 officers, 202 men, and 273 horses.

A mountain battery: eight 3-pounder guns, four 4" mortars, (weight 46 pounds,) 7 officers, 222 men, and 229 horses.

The heavy horse batteries have eight horses to each piece; the light horse batteries, and heavy foot, six horses per piece; the light foot batteries, four horses to each piece.

The caissons are two-wheeled carts, drawn by three horses abreast; each 12-pounder gun and 28-pounder licorne has three of these carts; each 6-pounder gun and 14-pounder licorne has two carts.

The foot and horse artillery have separate organizations.

From two to four batteries form a brigade; from two to four brigades, a division. It is proper to state that the organization, as given above, bids fair to be superseded, partially, at all events, by the introduction of the Napoleon gun-howitzer; these guns were being cast, in large numbers, in St. Petersburg, in 1855.

ENGINEER TROOPS.

These consist of battalions of sappers and squadrons of mounted pioneers.

The number of battalions is as follows: 1 of the guard, 1 of the grenadiers, 6 of the line, and 1 of the Caucasus.

There are two squadrons of mounted pioneers of the guard, and two squadrons belonging to the corps of dragoons; this is the peace establishment, to be increased to sixteen squadrons in time of war.

Each battalion of sappers consists of four companies.

Each company is composed of 5 officers, 20 sergeants, 6 musicians, and 230 corporals and privates; on the battalion staff are 6 officers and 2 sergeants.

The strength of each division (two squadrons) of the mounted pioneers is 13 officers, 29 sergeants, 8 musicians, 328 corporals and privates, and 275 horses.

In time of peace, each battalion has one ponton train of 42 pontons, and as many wagons; each squadron of the mounted pioneers has eight leather pontons.

THE ARMY CORPS.

The active troops heretofore enumerated form the following army corps: the corps of infantry of the guard, and the corps of grenadiers, both élite corps, and destined to form the reserves of the active army of operations; six infantry corps; the corps of the Caucasus; the reserve cavalry corps of the guards; the first and second reserve cavalry corps; the reserve light cavalry division.

The corps of the Caucasus forms the basis of the army of the Caucasus; its composition, and that of the other corps, will be given hereafter. It is now necessary to explain the law of distribution of regiments, &c., in the brigades, divisions, and corps.

The corps of infantry of the guard consists of 9 regiments of grenadiers of the guard, and 3 regiments of light infantry of the guard.

These are organized in 6 brigades, numbered from 1 to 6, and 3 divisions: the 1st brigade is composed of two regiments of grenadiers; the 2d brigade consists of 1 regiment of grenadiers and 1 of light infantry; these 2 brigades form the 1st division. The brigades of the other divisions are constituted in a similar manner.

Of the 10 regiments of grenadiers and 4 of carbineers, the first 9 of the former and the first 3 of the latter form the infantry divisions of the corps of grenadiers. The 10th grenadiers and the 4th carbineers form the élite brigade of the army of the Caucasus.

The infantry of the corps of grenadiers is formed in 3 divisions, organized exactly as the corps of infantry of the guard; the carbineers taking the place of the light infantry regiments of the guard. The infantry brigades and divisions of the guard and the grenadiers are each numbered in a separate series.

In the troops of the line, as distinguished from the two élite corps, 2 regiments of heavy infantry, or 2 of light infantry, form a brigade; a division is composed of one brigade of heavy and one brigade of light infantry; 3 such divisions constitute the main body of the infantry of an infantry corps. There are 42 regiments of heavy and 42 of light infantry, forming 21 divisions, numbered in a regular series. The first 18 divisions belong to the six infantry corps, the last 3 to the army of the Caucasus. In these 21 divisions there are 21 brigades of heavy and 21 of light infantry; 42 in all. The 1st and 2d regiments of heavy infantry (infantry of the line) form the 1st brigade of infantry of the line; the 1st and 2d regiments of light infantry form the 1st brigade of light infantry; these two brigades form the 1st division of infantry. The 2d division is composed of the 3d and 4th regiments of heavy and light infantry. The 1st, 2d, and 3d divisions belong to the 1st corps. In the same manner they run in regular series through the six corps.

The cavalry of the guard forms the corps of reserve cavalry of the guard; its regiments are numbered independently of the rest of the cavalry. The 8 regiments of army cuirassiers compose 2 divisions of the 1st reserve cavalry corps. The first 8 regiments of army dragoons constitute the 2d reserve cavalry corps; the 9th regiment belongs to the army of the Caucasus. The 16 regiments of army hussars form 8 brigades, in which they are distributed in a similar manner to the infantry regiments; the first 6 brigades belong to the infantry corps of the same numbers; the 7th brigade to the corps of grenadiers; the 8th to the reserve light cavalry division.

The 20 regiments of army lancers form 10 brigades, the first seven of which serve with the corresponding hussar brigades, thus forming the light cavalry divisions attached to the infantry and grenadier corps; the 8th and 9th brigades form the lancer division of the 1st cavalry reserve corps; the 10th belongs to the reserve light cavalry division.

The artillery of the guards and grenadiers is numbered independently of the rest of the artillery, except the brigade of the horse artillery of the grenadiers. There are 6 divisions of army field artillery for the 6 infantry corps, the division bearing the number of its corps.

Each division consists of one brigade of horse artillery, each brigade bearing the number of its corps, and the batteries numbered in regular series, and of 3 brigades of foot artillery; the brigades of the latter, as well as the batteries, are numbered in regular series throughout.

The batteries of heavy and light foot artillery are numbered separately. The brigade of horse artillery serving with the corps of grenadiers is numbered the 7th, to correspond with the light cavalry division of that corps. The brigades of horse artillery act with, and are regarded as belonging to, the cavalry divisions of their respective corps.

The artillery of the army of the Caucasus has a separate organization. The rifle battalions bear the numbers or names of the corps to which they belong.

The same rule applies to the sappers and the brigades of the train.

The rule explained above will be more clearly understood by giving an example; the fifth infantry corps will be taken for that purpose; its composition is as follows:

FIFTH INFANTRY CORPS.

- 5th division light cavalry.
  - 5th lancer brigade.....
    - 9th regiment of lancers.
    - 10th regiment of lancers.
  - 5th hussar brigade.....
    - 9th regiment of hussars.
    - 10th regiment of hussars.
- 13th division of infantry..
  - 25th and 26th regiments infantry of the line.
  - 25th and 26th regiments light infantry.
- 14th division of infantry..
  - 27th and 28th regiments infantry of the line.
  - 27th and 28th regiments light infantry.
- 15th division of infantry...
  - 29th and 30th regiments infantry of the line.
  - 29th and 30th regiments light infantry.
- 5th division field artillery.
  - 5th brigade horse artillery, light horse batteries, Nos. 9 and 10.
  - 13th brigade foot artillery..
    - Battery of position, No. 17.
    - Battery of position, No. 18.
    - Light foot battery, No. 33.
    - Light foot battery, No. 34.
  - 14th brigade foot artillery..
    - Battery of position, No. 19.
    - Light foot battery, No. 35.
    - Light foot battery, No. 36.
    - Light foot battery, No. 37.
  - 15th brigade foot artillery..
    - Battery of position, No. 20.
    - Light foot battery, No. 38.
    - Light foot battery, No. 39.
    - Light foot battery, No. 40.

Rifle battalion, No. 5.

Sapper battalion, No. 5, 5th brigade of the train.

There will now be given the general composition and strength of the several army corps:

	Battalions.	Squadrons.	Men.	Horses.	Guns.
CORPS OF INFANTRY OF THE GUARD.					
3 divisions of infantry	36	.....	39,528	.....	.....
1 battalion of Finland rifles	1	.....	1,072	.....	.....
1 battalion of sappers of the guard	1	.....	1,052	.....	.....
3 brigades foot artillery, each of 2 heavy and 2 light batteries	.....	.....	2,448	1,830	96
1 brigade of the train	.....	.....	.....	.....	.....
Total combatants	38	.....	44,100	1,830	96
THE CORPS OF GRENADIERS.					
3 divisions of infantry	36	.....	39,528	.....	.....
1 battalion grenadier rifles	1	.....	1,072	.....	.....
1 battalion grenadier sappers	1	.....	1,052	.....	.....
1 division light cavalry, of 2 regiments lancers and 2 regiments hussars	.....	32	5,508	5,508	.....
3 brigades foot artillery, each of 2 heavy and 2 light batteries	.....	.....	2,448	1,830	96
1 brigade horse artillery, of 2 light batteries	.....	.....	452	568	16
1 brigade of the train	.....	.....	.....	.....	.....
Total combatants	38	32	50,060	7,906	112
EACH OF THE SIX INFANTRY CORPS.					
3 divisions of infantry	48	.....	51,204	.....	.....
1 battalion of rifles	1	.....	1,072	.....	.....
1 battalion of sappers	1	.....	1,052	.....	.....
1 division light cavalry, as for corps of grenadiers	.....	32	5,508	5,508	.....
3 brigades foot artillery, 1 of 2 heavy and 2 light batteries, the remaining 2 of 1 heavy and 3 light batteries	.....	.....	2,348	1,782	96
1 brigade horse artillery, of 2 light batteries	.....	.....	452	568	16
1 brigade of the train	.....	.....	.....	.....	.....
Total combatants of each infantry corps	50	32	61,636	7,808	112
Total combatants of all the six infantry corps	300	192	369,816	46,848	672

General composition and strength of the several army corps.—Continued.

	Battalions.	Squadrons.	Men.	Horses.	Guns.
CORPS OF RESERVE CAVALRY OF THE GUARD.					
1 division cuirassiers, 4 regiments	.....	24	4,136	4,136	.....
1 division light cavalry, composed of: 1 regiment lancers, 1 hussars, 1 horse grenadiers, (dragoons,) 1 Cossacks, and 3 independent squadrons Cossacks.	.....	27	4,649	4,649	.....
1 division light cavalry, composed of: 1 regiment lancers, 1 hussars, 1 dragoons, 1 Cossacks, and 2½ independent squadrons of Cossacks	.....	26½	4,564	4,564	.....
1 division horse artillery, of 1 heavy, 4½ light batteries	.....	.....	1,307	1,652	44
1 division mounted engineer troops	.....	2	378	275	.....
1 brigade of the train	.....	.....	.....	.....	.....
Total combatants	.....	79½	15,034	15,276	44
FIRST RESERVE CAVALRY CORPS.					
2 divisions cuirassiers, each of 4 regiments	.....	48	8,272	8,272	.....
1 division lancers, of 4 regiments	.....	32	5,508	5,508	.....
1 division horse artillery, of 2 heavy and 4 light batteries	.....	.....	1,484	1,884	48
1 brigade of the train	.....	.....	.....	.....	.....
Total combatants 1st reserve cavalry corps	.....	80	15,264	15,664	48
SECOND RESERVE CAVALRY CORPS.					
2 divisions of dragoons, each of 4 regiments	.....	80	13,832	13,832	.....
1 division horse artillery, of 2 heavy and 4 light batteries	.....	.....	1,484	1,884	48
1 division mounted engineer troops	.....	2	378	275	.....
1 brigade of the train	.....	.....	.....	.....	.....
Total combatants 2d reserve cavalry corps	.....	82	15,694	15,991	48
RESERVE LIGHT CAVALRY DIVISION.					
2 regiments lancers	.....	12	2,068	2,068	.....
2 regiments hussars	.....	12	2,068	2,068	.....
3 light batteries horse artillery	.....	.....	678	852	24
Companies of the train	.....	.....	.....	.....	.....
Total combatants	.....	24	4,814	4,988	24

Recapitulation of the divisions, &c., of active troops of the Grand Army of Operations.

Army Corps.	INFANTRY.				CAVALRY.				ARTILLERY.									ENGINEER TROOPS.		Observations.
												Pieces.								
	Divisions.	Brigades.	Regiments.	Battalions.	Divisions.	Brigades.	Regiments.	Squadrons.	Divisions.	Brigades.	Batteries.	Horse.	Foot.	Heavy.	Light.	Total.		Sapper battalions.	Mounted squadrons.	
Infantry of the guard.....	3	6	12	37	...	...	...	.....	...	3	12	...	96	48	48	96		1	.....	In addition to these are the brigs. of the train, who are non-combatants.
Grenadiers.....	3	6	12	37	1	2	4	32	1	4	14	16	96	48	64	112		1	.....	
Infantry.....	18	36	72	294	6	12	24	192	6	24	84	96	576	192	480	672		6	.....	In time of war there would be 12 additional squadrons of mounted engineer troops.
Reserve cavalry of the guard.	...	...	...	...	3	6	12	77½	1	2	5½	44	...	8	36	44		.....	2	
1st reserve cavalry.....	...	...	...	...	3	6	12	80	1	2	6	48	...	16	32	48		.....	.....	To the infantry corps in Poland, and to others, are attached Cossacks and their batteries, in variable numbers.
2d reserve cavalry (dragoons).	...	...	...	...	2	4	8	80	1	2	6	48	...	16	32	48		.....	2	
Reserve light cavalry division.	...	...	...	...	1	2	4	24	1	...	3	24	...	...	24	24		.....	.....	
Total.....	24	48	96	368	16	32	64	485½	11	37	130½	276	768	328	716	1,044		8	4	

Total combatants of the active army: 394,836 infantry, 83,653 cavalry, 27,101 artillery, 9,172 engineer troops, 1,044 guns; or, 514,762 men, and 108,425 horses. This is the number of troops disposable upon the breaking out of a European war, excluding reserves, and without calling upon any of the local troops doing garrison duty in the interior. If the war is of such a nature that the defence of the Caucasus can be intrusted to the native troops, there may be added to the grand army the 19th, 20th, and 21st divisions of infantry, the élite brigade, (10th grenadiers and 4th carbineers,) and the 9th dragoons—*i.e.* 58,864 infantry, and 1,729 cavalry. It is also to be observed that, on the breaking out of war, these troops ought to contain, under ordinary circumstances, neither recruits nor invalids.

The losses by disease on the Danube, the immense length of the lines of communication, and the necessity of keeping formidable armies near the Baltic and in Poland, will sufficiently account for the small portion of this mass concentrated in the Crimea in the early part of the late war.

RESERVE TROOPS OF THE GRAND ARMY.

There are two classes of reserve troops, the *reserve* and the *depot* troops. Authorities differ somewhat as to the constitution of these reserves, but it is believed that the description here given will give a correct idea of the principles of their formation, although it may be incorrect in some details.

The term of service in the Russian army is: twenty years in the military colonies, twenty-three years in the guards; twenty-five years in other corps.

By the late Emperor Nicholas was introduced the system of granting unlimited furloughs to soldiers who had served faithfully for a certain time. For the purposes of conscription, Russia in Europe is divided into the eastern and western provinces, the line of separation being pretty nearly the meridian of Moscow.

The soldiers from the eastern provinces and the military colonies receive their furlough after fifteen years' service; those from the western provinces, after ten years' service; both categories then pass into the reserves. Any soldier who entered the service in consequence of civil misdemeanors, or who has been condemned to punishment for a serious offence while in the service, loses his right to the furlough, and, in the latter case, may even be required to serve longer than twenty-five years.

The soldiers from the western provinces and the colonies compose the mass of the first reserve, (reserve proper.) They are called together for exercise during about four weeks in every year, and in time of war are the first called upon for service. In this case, they are either drafted into the active battalions, squadrons, &c., or may serve as battalions, &c., by themselves. In time of peace, when not called out for drill, they exercise their civil avocations as any other persons.

The second reserve (depot troops) are only called out in time of war.

The small permanent skeletons of these reserve battalions, squadrons, and batteries, serve as schools of instruction for recruits, who are usually kept there about a year before joining their regiments.

The principal depot for the instruction of infantry recruits is at Moscow.

The reserve troops are officered by officers on leave of absence, on the retired list, &c.

Through the whole army, including the guards, there is for every regiment of infantry a reserve battalion, for every regiment of cavalry a reserve squadron, for every brigade of artillery a reserve battery, and two reserve battalions of sappers.

Omitting the guards, there is for every regiment of infantry a depot

battalion, for every regiment of cavalry a depot squadron, for every brigade of foot artillery a depot battery, and two depot battalions of sappers.

TROOPS HAVING A LOCAL DESTINATION.—THE ARMY OF THE CAUCASUS.

The regiments of the divisions of infantry, (19th, 20th, and 21st,) forming the basis of the army of the Caucasus, have lately, perhaps only temporarily, been increased to 5 battalions each, and the regiments of the élite brigade to 4 battalions each; the regular portion of this army is then as follows:

3 divisions of infantry, each of 4 regiments of 5 battalions..	62,880 men.
1 élite brigade (10th grenadiers and 4th carbineers of 4 battalions each).....	8,576 "
1 battalion of rifles.....	1,048 "
47 regular battalions of native troops.....	49,585 "
1 battalion of sappers.....	1,052 "
1 regiment of dragoons (the 9th) of 10 squadrons.....	1,729 "
1 division of artillery, of 4 brigades, having in all: 4 heavy foot batteries of 12 pieces each, 6 light foot batteries of 8 pieces each, 6 mountain batteries of 12 pieces each; total 168 pieces, and 1 rocket battery.....	3,953 "

Total regular troops: 123,141 infantry, 1,729 cavalry, 3,953 artillery, 1,052 sappers, and 168 pieces and 1 rocket battery.

Of the reserve and depot battalions and squadrons of the 19th, 20th, and 21st divisions, the élite brigade, and the dragoon regiment, one-half are kept constantly under arms and ready to march.

Of the troops mentioned hereafter under the head of irregulars, the Cossacks of the line of the Caucasus, the Mussulmen, and a portion of the Cossacks of the Don and the Black Sea, are constantly under arms and ready for service. All of the Cossacks of the Don, and those of the Black Sea, can be made available if necessary.

In other European nations, the regular troops destined to form the army of operations in war, perform during peace the service of the interior, which is confided to the national guards and militia in war; but in Russia this service is performed by a special regular army, the necessary cavalry and field artillery for which are chiefly furnished by the Cossacks. These troops are charged with the service in the fortresses and cities, with the defence of certain turbulent portions of the frontiers, the administration of the arsenals, workshops, &c.

Infantry.—12 battalions of Finland form the 22d division of infantry, and perform the interior service of Finland.

10 Orenburg battalions form the 23d division of infantry, and are charged with the interior service of that province.

15 battalions of Siberia compose the 24th division of infantry, and perform the interior service of that region. This division is organized in 3 brigades, and has 2 guns with each brigade.

50 battalions of guards of the interior; each battalion having 21 officers and 1,000 men, and divided into 4 companies. For every 5 battalions there are 5 howitzers, (licornes.) These troops are employed in European Russia, partly as the garrisons of fortresses, partly in the open cities. They are charged, also, with the transportation of the reserves, recruits, &c., their commanders having the superintendence of the reserves of all classes. Each battalion has attached to it a *penal section*, for minor offenders from the army. In these battalions are many veterans.

Cavalry.—There are 11½ squadrons of *gendarmes*, with a total strength of 2,364. In time of peace, they act as a military police; in war, they serve at the head-quarters of corps and armies in the field, having charge of the police, prisoners, &c.

Artillery.—98 companies of garrison artillery, each company consisting of 4 officers and 165 men. These companies serve the artillery of the fortresses, and some serve at the arsenals, &c.

12 arsenal companies, of the same strength as the last. These serve at the arsenals, foundries, artillery workshops, small-arm factories, powder-mills, &c.

6 laboratory companies, each consisting of 4 officers and 182 men. They are stationed at the six principal laboratories of the empire.

Engineers.—This corps consists of 10 general officers, and 342 other officers, in addition to 25 companies of workmen, (selected mechanics,) of 3 officers and 208 men each. They are charged with the construction of fortifications and the care of material; 54 penal companies (soldiers condemned to labor on the fortifications) are under their direction. This garrison engineer corps has also charge of 2 engineer parks for the supply of sapper and pontonier materials.

552 companies of infantry veterans, who are on service in the smaller towns and villages, have places in the post-office service, act as orderlies in government offices, take charge of public buildings, &c. 271 invalid establishments, many of whose members perform similar services to those last mentioned.

THE MODEL REGIMENTS.

The object of the model regiment of cavalry is to secure a uniform system of equitation and instruction throughout that arm of service. It consists of 6½ squadrons, viz.: ½ squadron of Cossacks, 1 squadron of

cuirassiers, 1 squadron of hussars, 2 squadrons of dragoons, 2 squadrons of lancers. It is composed of officers, non-commissioned officers, and privates from all the regiments of cavalry; after going through a thorough course of instruction, they return to their respective regiments. With similar objects, there are also established a model regiment of infantry; a model battery of horse artillery; a model battery of foot artillery; and a model battalion for the army of the Caucasus. Officers and men generally serve one year with the model regiments.

MILITARY SCHOOLS.

As these will be fully treated of by another member of the commission, it is only necessary to state here that they are numerous and admirable. It is difficult to perceive in what respect they are inferior to any in Europe.

The majority of the officers come from the military schools, and the absolute necessity of such institutions is fully recognized.

IRREGULAR TROOPS.

These include the Cossacks, Caucasians, Calmucks, Tartars, Boschkirs, &c. These people are not subjected to the ordinary conscription, but, being exempt from certain taxes, are required to furnish, at their own expense, a certain quota per district. The organization of all these troops is based upon that of the Cossacks, who form the most important and effective portion.

The great mass is of cavalry, with some batteries, and a few battalions of infantry, for service in special districts.

The sotnia is the unit, both of cavalry and infantry; its strength varies from 100 to 200 men.

All the officers are appointed by the emperor; the subaltern grades alone being filled, as a general rule, by Cossacks.

Although the Cossacks are all classed under the general name of irregulars, there are many regiments which are, in reality, regular light cavalry; it is probable that the Cossacks of the guard, and many of those of the Don, are the best regular light cavalry in the world. I have witnessed manœuvres of the Cossacks of the guard conducted with a precision that it would be impossible to exceed.

The service of the irregular troops is mostly performed on the frontiers, and in the more wild and disturbed portions of the empire, *e.g.* in Siberia, on the frontiers of China and Tartary, in the Caucasus, on the Danube, &c. Yet large bodies of them are with the regular troops in Poland, &c., and they are much employed at the custom-houses as police, &c. The Cossacks of the Don and the Oural, being no longer in direct and constant contact with an enemy, may, ere long, cease to exist as such; at

present, many of them are employed in the Caucasus. The Cossacks of the Sea of Azoff man the gun-boats used on that sea and on the coast of the Caucasus.

The Cossacks of the Black Sea are now chiefly in the Kuban; and it was by a union of a portion of these with the mountain Cossacks that the formidable Cossacks of the line of the Caucasus were formed.

It is impossible to obtain accurate and full information as to the numbers of the irregular troops; the enumeration of Cossacks given below is probably below the true number.

EFFECTIVE STRENGTH OF THE COSSACKS.

Names of Cossack armies.	Regiments of cavalry.	Sotnias of cavalry.	Battalions.	Batteries.	Pieces.			Approximate strength, exclusive of artillery.
					Horse artillery.	Foot artillery.	Total.	
1. Army of the Don.....	58	348	.....	14	112	.....	112	42,000 cavalry.
2. Army of the Danube....	2	12	.....	.....	.....	.....	.....	1,700 cavalry.
3. Army of the Black Sea..	12	74	9	4	24	8	32	9,000 cavalry. 9,000 infantry.
4. Army of line of Caucasus.	18	108	.....	3	24	.....	24	16,000 cavalry.
5. Army of Oural.....	12	60	.....	.....	.....	.....	.....	7,500 cavalry.
6. Army of Orenburg.....	10	60	.....	3	24	.....	24	7,500 cavalry.
7. Army of Astrakan.....	3	18	.....	1	8	.....	8	2,000 cavalry.
8. Army of Siberia.....	9	54	.....	3	24	.....	24	6,500 cavalry.
9. Army of Chinese frontier.	.....	8	.....	.....	.....	.....	.....	1,000 cavalry.
10. Army of cities of Siberia.	.....	.....	24	.....	.....	.....	.....	24,000 infantry.
Total.....	124	742	33	28	216	8	224	93,000 cavalry. 33,000 infantry.

On the Chinese frontier there are also five regiments of Tougouse cavalry. In the Caucasus there are regiments of native irregulars, Mussulmen, &c. During the campaigns of 1828 and 1829 there were with the army of Marshal Paskivitch four regiments of Mussulmen cavalry; the number has been increased since then.

RECRUITING, ETC.

The officers of the army are chiefly supplied by young nobles, who enter the service after having passed, as cadets, through some of the numerous military schools, or else have prepared themselves by serving six months as privates, two years as sergeants, and then as ensigns in the regiments; and partly by sergeants, who, after twelve years' irreproachable service, have the right to demand an examination for the grade of ensign.

The ensign is a non-commissioned officer in the line of promotion, and must pass an examination before receiving a commission.

The officers of the general staff (*état major*) are selected from officers of all arms, who, after having served two years, apply for the corps. They must be recommended by their commanders, then pass an examination before being admitted to the school of the general staff; having spent two years at this school, they undergo a final examination; if they pass this, they receive vacancies as they occur, serving meanwhile with arms of service different from that to which they originally belonged.

The non-commissioned officers, musicians, soldiers, veterinaries, masterworkmen, &c., are supplied in three ways: first, by conscription; second, from the cantonists; third, by voluntary enlistment.

For the purposes of the conscription, the European provinces are divided into two parts, the eastern and the western; the line of demarcation follows very nearly the meridian of Moscow. In time of peace each of these divisions takes turns in furnishing the annual supply of recruits, which is five men out of every 1,000 souls of the division called upon. But in time of war, or whenever the exigencies of the service demand it, this ratio is increased, or both divisions are called upon at once. There are certain conditions which exempt from the conscription: for instance, if there is but one male in a family; being the father of three young children; being an orphan or a foundling, &c., &c. In the communities called upon, lots are cast; but it is mentioned as a singular instance of the workings of chance that the lot is very apt to fall upon the most worthless characters in the community.

Under the head of conscription it may be mentioned that men guilty of civil offences are frequently condemned to serve in the army: for instance, if a coachman carelessly drives over any one in the streets, he is sent forthwith to the army; vagabonds, thieves, gipsies, dissipated men, &c., are not unfrequently condemned to serve. Yet mingled with these worthless characters are many good men: in fact, the latter preponderate, and the influence of rigid discipline soon converts the others at least into good soldiers, if not into good men. Any one designated as a conscript may purchase a substitute, if he can find one.

The *cantonists* are soldiers' children, educated for the army at the expense of the State. Every son of a non-commissioned officer or soldier, born after his father enters the service, is necessarily a cantonist.

At the option of his parents, he may be taken care of in one of two ways: he may remain with them until the age of twenty, the government allowing him clothing and rations, and then enter the army as a private soldier; or he may, at the age of six, be taken charge of by the government, and is then brought up at one of the establishments maintained for the purpose.

With regard to the cantonists of the first class, the State assists in their education, which is not so perfect as that of the others; those who are physically unfit for the service are apprenticed to a trade, and finally sent to the military colonies.

The cantonists of the second class remain at the preparatory establishments until the age of 12; they then enter the corps of cantonists, which consists of 25 battalions, 20 squadrons, 5 batteries, 1 regimental school of the guards, 14 artillery division schools, 3 sapper brigade schools, 1 Cossack school, and 1 Siberian school.

At about the age of 17 they leave the corps of cantonists, and enter either the *battalions of instruction*, where 8 battalions of carbineers, 1 squadron of dragoons, (attached to the model regiment of cavalry,) 3 batteries, and 1 battalion of sappers are destined to receive them, or enter the special schools, among which are, 11 schools of the garrison artillery, for educating non-commissioned officers, 3 technical schools, for the education of master-workmen in the armories, 3 for master-workmen in the powder-mills, 3 for master-workmen in the arsenals, 1 veterinary school, 1 surgical school, 1 school for accountants, 1 topographical school, 1 school for riding-masters, and 1 for fencing-masters; finally, they may enter the army directly from the corps of cantonists.

With the means thus provided, the cantonists furnish excellent non-commissioned officers, clerks, musicians, master-workmen, veterinaries, &c., &c.

This would seem to be the proper place for alluding to the laws with regard to the marriage of officers and men.

No officer is allowed to marry without permission; this permission is granted only when either the officer, or the lady whom he is about to marry, possesses a certain amount of property. This amount is different for different grades, and is intended to be sufficient to enable the officer to support his family in a manner befitting his condition during his life, and to give them a decent competence after his death. The marriage of the soldiers is encouraged, for the reason that the institution of the cantonists prevents their children from being an encumbrance to the regiment and a burden upon the State.

Wherever it is possible, suites of rooms are appropriated to the married soldiers: more than one family usually living in the same room.

Voluntary enlistments are comparatively few. To every volunteer who presents himself the government advances a certain bounty, which it receives back again from the first conscript who desires a substitute. The greater part of the bounty is invested for the volunteer, who receives but a small portion of it before the expiration of his enlistment.

THE MILITARY COLONIES.

Those for the cavalry and horse artillery are in the south of Russia.

(*a*) The Ukraine colony, in the government of Charkoff: here are the 2d reserve cavalry corps, the 6th division of light cavalry, and 6th brigade of horse artillery.

(*b*) Colony of South Russia, in the government of Cherson: 1st reserve cavalry corps.

(*c*) Colony of the Boug, in the government of Podolia: 4th division of light cavalry, and 4th brigade of horse artillery.

(*d*) Colony of the Lower Boug, in the government of Cherson: 5th division of light cavalry, and 5th brigade of horse artillery.

The reserve light cavalry division, and the reserve batteries of the horse artillery belonging to the infantry corps, are also in these colonies.

The arrangement of the colonies is as follows: one-half the ground is reserved for the support of the troops, and is cultivated by the colonists; the other half is divided among the colonists, each family having 240 acres, one plough, and a house. From 40 to 50 houses form a *platoon*, 180 to 190 a squadron, or village, and from 6 to 10 squadrons a regiment.

The officers preserve military and civil order among the colonists.

Each house is required to feed and lodge a soldier, without his horse, the soldier assisting his host in his work. The colonist is exempt from all taxes, military liabilities, &c. The possession passes down to the eldest son, and renders him exempt from military duties, while the other sons become cantonists, like soldiers' children, and are eventually taken into the regiment.

In the colonies every married soldier has a separate house. In every village there are stables, riding-houses, hospitals, arsenals, &c.

The infantry colonies, near Novgorod, are no longer true colonies; the system has been abandoned there, and at present certain troops are cantoned there, under no peculiar regulations.

UNIFORM.

The predominant color of the Russian uniform is dark green. A frock-coat is worn by all grades, and all arms of service; it is green, except for certain portions of the cavalry.

Boots are worn by all arms; they are habitually inside the pants, except for the cuirassiers, who, in full dress, wear the jack boot; the infantry, however, on the march, tuck the pants inside of the boot-legs.

The stock is of green cloth, and fastens by a button; it has in front a flap, some four or five inches long.

The distinctions of regiments, divisions, and corps, are found in the

buttons, shoulder-straps, and facings of the cuffs and collar; sometimes in the head-covering and the color of the dress.

On certain occasions the officers wear sashes; these are of silver cloth for the guard, and of mohair, colored white, black, and orange, for the rest of the army; the tassel is worn behind the left hip. The sword-knot is of similar material and color. Officers on duty wear the gorget; a crescent-shaped metallic plate, hung around the neck, and resting on the breast just below the collar. Generals, staff officers, and adjutants of infantry, wear a straight sword. The different grades of officers are distinguished chiefly by the epaulettes, or shoulder-straps.

Company officers wear epaulettes without bullion, *i.e.* merely the strap and crescent, the latter of wire *instead of solid metal*; a sub-lieutenant has one star on the strap of each epaulette, a lieutenant two stars, a captain three. Field officers have a very short and light bullion; a major has one star, a lieutenant-colonel two, a colonel three.

General officers wear a heavier bullion, of the pattern known as the box-epaulette; a major-general has one star, a lieutenant-general two, a general three. A field marshal wears a still heavier epaulette, with three stars, and a distinctive gold embroidery on the collar.

All officers have, in full dress, lace or embroidery on the collar and cuffs, distinctive of rank.

The aiguillette is worn by staff officers.

Mounted officers are required to wear their spurs on all occasions. The helmet is worn by all staff officers; officers serving with regiments wear a head-dress similar to that of their men.

The forage cap of the officers is flat, with a large round top, and a peaked visor. General officers wear scarlet pants, with a gold stripe.

Other officers wear dark green pants with a red cord, except in those regiments where the men wear pants of some other color than green.

Infantry officers wear an overcoat of the same cut and color as those of the men.

Cavalry and staff officers wear a mantle, or loose overcoat, with a long cape, and of a dark gray color.

Recently a field uniform has been adopted for the officers, in which the epaulettes are replaced by shoulder-straps of a shape similar to those worn by the men.

The distinctive mark of a non-commissioned officer is a narrow strip of gold or silver lace (depending upon the color of the button) on the upper and front edges of the collar and on the cuffs.

Chevrons are worn on one arm, and merely designate length of service.

The soldiers' clothing is of a very coarse but serviceable material, and is made up in the regiments.

The same overcoat is worn by all arms of service; it is of a brownish-

gray color; very long, reaching to within three or four inches of the bottom of the pants; double-breasted, standing collar, without cape; it is made very loose by means of large plaits in the back, which can be gathered up by a strap and button; the buttons, shoulder-straps, cuff and collar facings, are the same as those of the uniform coat. As the men have no blanket in the field, the overcoat is their only protection. It is the habitual and favorite dress of the Russian soldier; on the march the infantry hook up the skirts.

The forage cap, for all arms, is low, with a flat, round top, and has no visor; it is of the color of the overcoat, usually has a red cloth band, with the number of the company in yellow cloth, and a red cord around the edge of the top.

Instead of socks, the men have bandages of linen, which they wrap around the feet. Shirts and drawers are issued.

INFANTRY.

Black leather helmet, with a brass spear-head; thin strap, plated with brass scales; large imperial eagle of brass on the front.

Coat, dark green; distinction of regiments and divisions as follows: number of the regiment on the button, which is yellow; number of the division on the shoulder-straps, which are shaped like those upon the old United States private's undress jacket. Infantry of the line have red facings on their collars; light infantry, *dark* green; both have red cuff-facings. The 1st regiment of each brigade of infantry of the line have red, the 2d white shoulder-straps; the 1st regiment of each brigade of light infantry have light blue, the 2d dark green shoulder-straps. The rifle battalions have white buttons and shoulder-straps; black facings. Pants of all the infantry, dark green, with a red cord; in summer, white linen.

CAVALRY.

Pants, except for the Cossacks and dragoons of the Caucasus, light blue, with a red cord, and re-enforced with black leather.

Cuirassiers.—Metallic helmet, white coat, with facings of various colors for the different regiments; white gauntlets.

Dragoons.—Helmet like that of the infantry, but with black horsehair plumes; coat, dark green, yellow buttons, brass shoulder-scales.

Lancers.—Czapka, or Polish lancer cap, of same color as the facings; water-proof cover. Coat, sky-blue; facings different for different regiments; buttons white.

Hussars.—Cloth shako, nearly cylindrical, but a little larger at the top than at bottom; visor sloping and peaked; hair hackle; cap cord; water-proof cover. Coats of various colors, trimmed with bright cord; shoulder-

knot of cord of same color as the trimmings. In full dress, the pelisse is worn.

In the cavalry, the number of the regiment, &c., is indicated in a manner similar to that pursued in the infantry.

All officers of cavalry wear a pistol cartridge-box, suspended by a shoulder-belt; it is richly decorated with metal.

Cossacks of the guard.—Pants, dark blue, with a red stripe; coat, dark blue; no buttons; fastens by hooks; worsted epaulettes, without bullion. Cylindrical fur shako, without visor; double pompon on the left side; cloth bag hanging down on the right side; water-proof cover.

All the head-dresses heretofore mentioned have on the front a brass imperial eagle, 6¾ inches high and 6½ inches broad; on this is the number of the regiment.

Dragoons of the Caucasus.—Light gray pants; dark gray coat, cut like that of the Cossacks of the guard.

Hat, turban-shaped, with a crown of cloth, and a broad thick band of lamb's wool.

The Cossacks of the line of the Caucasus, most of the other Cossacks, and, on service, most of the regular troops serving in the Caucasus, wear the hat described for the dragoons of the Caucasus.

The dress of the Cossacks is loose and easy; generally of dark colors.

The Mussulmen troops wear the high, pointed Persian cap of lamb's wool; their dress is cut in the Persian style, and is generally of very bright colors,—each man selecting those colors which suit his fancy.

Artillery.—Dragoon helmet; coat dark green, yellow buttons, black facings, red shoulder-straps. Horse artillery have brass shoulder-scales, like the dragoons. Cossack artillery wear the Cossack dress.

Sappers.—Same uniform as the foot artillery, except that the buttons are white and the belts black.

Gendarmes.—Dragoon helmet; light blue coat and pants; white buttons; white gauntlets.

The train.—Gray uniform, with blue facings; red shoulder-straps; white buttons and belts. Officers' servants wear the uniform of the train.

INSPECTIONS.

Independently of special inspections by staff officers, every regiment is inspected once a month by its colonel, as often by the general of brigade, 3 or 4 times a year by the general of division, and once each year by the general commanding the army corps.

At the inspections by the general officers, after the inspection under arms, the men are assembled without the officers, and are then asked whether they have any complaints to make.

The aides of the emperor, of the minister of war, &c., are frequently sent to make unexpected inspections of distant establishments.

QUARTERS.

They are comfortable, and kept in good order.

The men have wooden or iron bunks; single iron bunks are being generally introduced. Each man is provided with a straw mattress and pillow, and one or more blankets, according to the season; the bedding belongs to the barracks, and not to the men, so that none of it accompanies the men when they change quarters. In the quarters of bands, &c., are tables and chairs.

The wooden bunks are provided with drawers; there is a shelf and rack over the head of each bed; the arms in racks along the walls. In quarters, there are always sergeants and privates of the day on duty, with side-arms. Some of the quarters, especially in new barracks for the special arms, have separate mess-rooms.

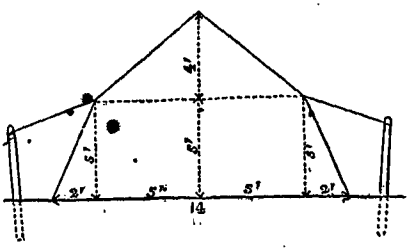
In the new barracks, and in some of the old, arrangements for the ablutions of the men are provided in the building.

The officers' quarters are generally good, and are, to a certain extent, provided with furniture by the government.

The cavalry quarters are sometimes over the stables.

TENTS.

The annexed sketch represents a vertical section through the centre of a tent; they are square, with a pyramidal roof. They are supported by a centre pole, and a short pole at each angle of the roof. When the arms are taken inside the tent, they are tied around the centre pole.



In permanent camps the men have a plank banquette bed, and usually dig a cellar 3′ deep, banking up around the tent with the earth thus obtained.

A tent is pitched by 5 men in 3 minutes. The allowance of tents is: 1 for each field officer, 1 for every two company officers, 1 for every 15 non-commissioned officers and privates, whether of infantry or cavalry.

HOSPITALS.

As these will be fully considered in the report of another member of the commission, it will be sufficient to record here my opinion that the

best Russian military hospitals are, for comfort, convenience, and cleanliness, the model hospitals of the world.

In all of them the utmost order and cleanliness are preserved, and the greatest attention is paid to the sick.

The command, control of the police, and responsibility, are always vested in an officer of the line, who has other officers as assistants; the surgeons have merely to prescribe, order the diet, &c., but have not the slightest military authority or responsibility. I would call attention to this system as being eminently worthy of consideration, in the event of the establishment of large temporary hospitals during a war, or any concentration of a large number of troops.

THE ARTEL.

This is a species of company fund, belonging in common to all the non-commissioned officers and men of the company. It is formed by certain regular stoppages of pay, extra allowances, and the produce of extra labor by the men, whether for civilians, as sap guards, &c., or otherwise. These extra labors are encouraged wherever circumstances permit, and the whole product is turned into the artel. By means of this fund the men are provided with vegetables, salt, extra meat, oatmeal, cleaning-utensils, wagons and horses for the transportation of the company provisions, &c.

It is only when the soldier leaves the service that he receives his share of the fund; this individual share is stated to amount sometimes to more than $100.

The artel is divided into two parts, or funds: one serving to provide for the current wants of the men, the other to pay them their share upon leaving.

The management and application of the artel are intrusted to sergeants and privates elected by the company.

One of these men makes the daily purchases for the mess, &c., being always accompanied and watched by two others, whose duty it is to protect the interests of the company.

A monthly report is made to the captain.

RATIONS.

The daily ration consists of 2¾ pounds of bread, half a pound of fresh meat, salt, oatmeal, cabbage, and brandy. The bread, the brandy, and one-half the meat, are furnished by the government, that is to say, always issued in kind; the rest of the ration is purchased by means of the artel; the daily sum allowed to the artel for this purpose varies with circumstances.

The Russian soldier has, habitually, three meals per day: 1 Breakfast, simply of bread and salt, with a little brandy. 2. Dinner, at 11 o'clock,

of bread and soup, made of meat, cabbage, &c. 3. Supper, at 4 o'clock, of bread and soup, or oatmeal porridge. The bread is brown; both it and the soup are coarse and acid, but they are nutritious and plentiful; the acidity is agreeable to the taste of the Russian.

In permanent camps, and in barracks, the cooking is by company, in large boilers. The baking is done by men detailed permanently.

In barracks the men usually eat in their own rooms, but they sometimes have mess-rooms; in permanent camps messing-places are provided in rear of the kitchens, the seats and table being sodded banks of earth, with a roof of boughs or thatching.

Each man has a wooden spoon, and there is a soup-bowl for every 6 men, out of which they eat in common.

No portable ovens are carried on the march.

Where it is possible, bakers are sent on two days in advance to bake in the ordinary ovens of the villages; if this cannot be done, they either carry flour and bake it in temporary ovens of wattling, covered with clay, or else issue biscuit.

In the field a small copper kettle, without cover, is carried for every three men.

PAY.

The circumstances in which the Russian troops are placed are so totally different from those of our own army as to render entirely useless any attempt at a comparison of the respective amounts of pay.

It will be sufficient to state that the pay of the Russian army is very low, and that the principle is recognized of increasing the pay, of both officers and men, in proportion to the importance, difficulty, and danger of the service performed.

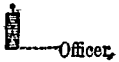
The captains of squadrons, companies, &c., are responsible for the arms, accoutrements, spare clothing, &c., of their commands.

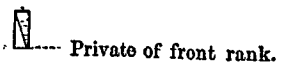
As the militia was a peculiar body, and not a part of the regular organization, but a new feature called forth by the exigencies of the late war, it is deemed best not to include it in the foregoing general description of the military establishment.

It will be described in the chapter on the Russian infantry, which seems to be its appropriate place.

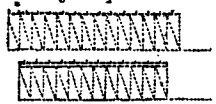
EXPLANATION OF THE SIGNS.

SCHOOL OF THE PLATOON.



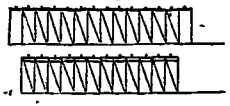


Original position.



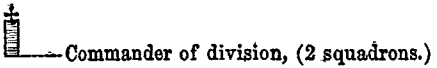
PLATOON DEPLOYED.

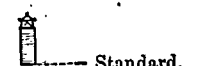
Second position.



Final position.

SCHOOL OF THE SQUADRON.

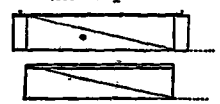




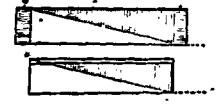
Original position.

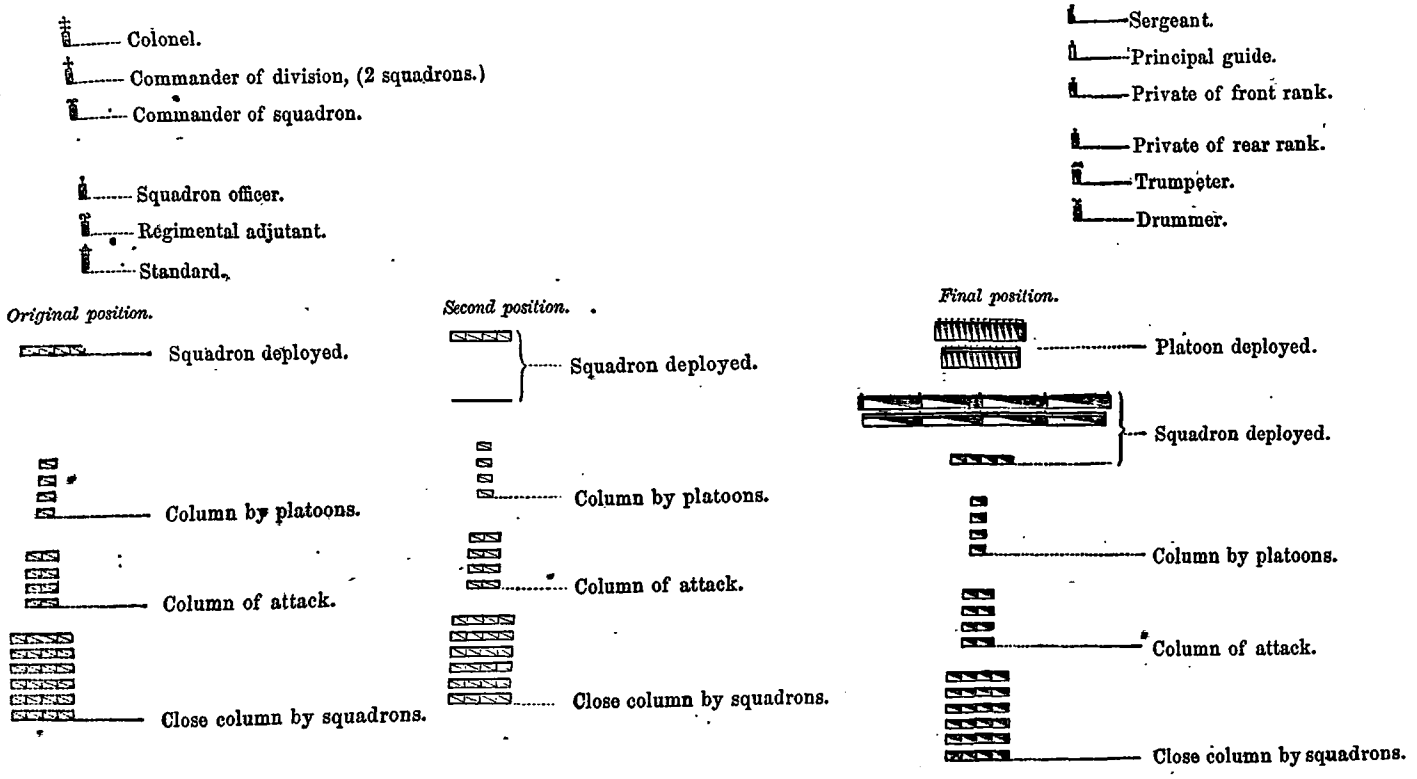
PLATOON DEPLOYED.

Second position.



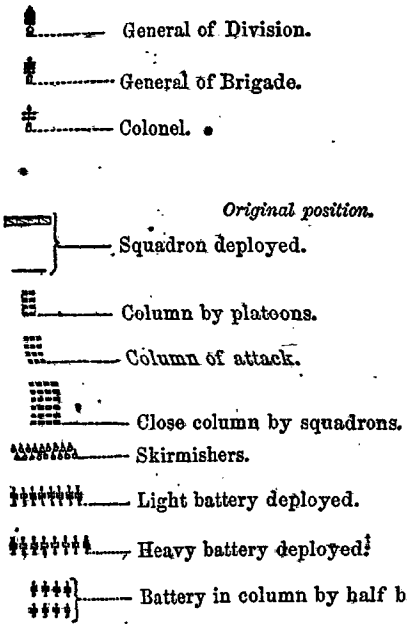
Final position.

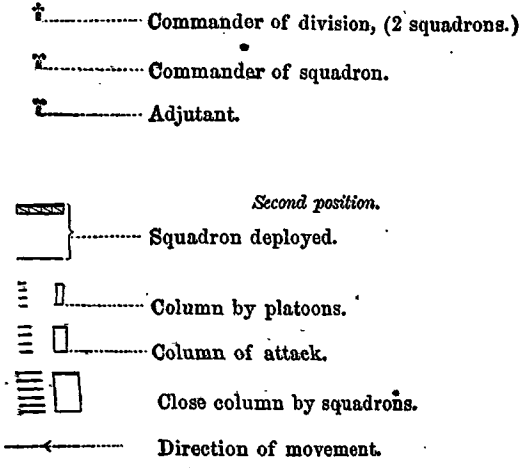



Colonel.
Commander of division, (2 squadrons.)
Commander of squadron.
Squadron officer.
Regimental adjutant.
Standard.
Sergeant.
Principal guide.
Private of front rank.
Private of rear rank.
Trumpeter.
Drummer.
Original position.
Squadron deployed.
Column by platoons.
Column of attack.
Close column by squadrons.
Second position.
Squadron deployed.
Column by platoons.
Column of attack.
Close column by squadrons.
Final position.
Platoon deployed.
Squadron deployed.
Column by platoons.
Column of attack.
Close column by squadrons.

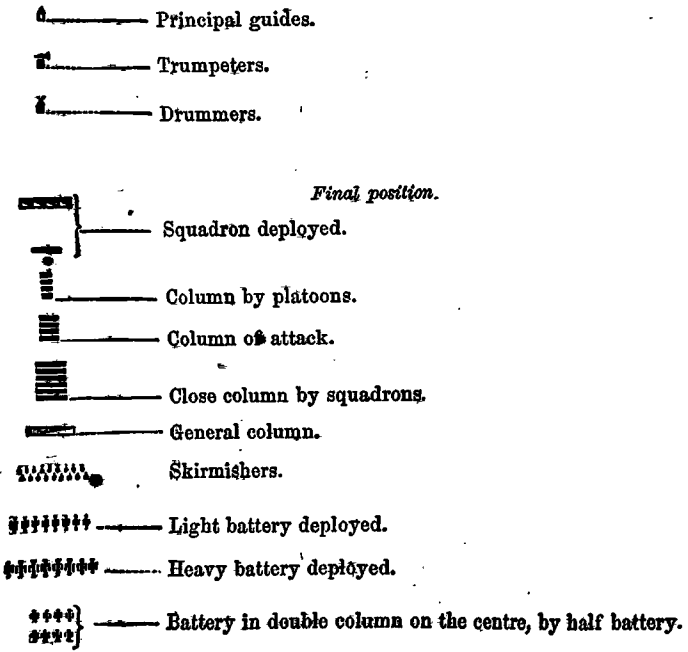
EXPLANATION OF THE SIGNS.—*Continued.*

EVOLUTIONS OF THE LINE.





EVOLUTIONS OF THE LINE.—*Continued.*



CHAPTER II.

THE INSTRUCTION AND TACTICS OF CAVALRY.

THE Russian cavalry tactics comprise the following schools, or divisions of instruction: 1. The school of the recruit, divided into: *a.* Manège, or individual equitation; *b.* Drill in single rank; *c.* Sabre, lance, carbine, and pistol exercise. 2. The school of the platoon. 3. School of the squadron. 4. School of the regiment. 5. Evolutions of the line. As supplements to these, are the regulations for service in garrison and in the field; the latter being divided into regulations for field service during peace, and those for time of war.

It is proposed to give in this chapter sufficiently copious extracts from the tactics to explain the system of instruction and its peculiarities. The sabre exercise is presented in full. The subjects are presented in the order in which they occur in the tactics; those portions being omitted which are neither new nor interesting. Although generally condensing the text, I have endeavored to preserve the spirit and language of the original Russian.

I. SCHOOL OF THE RECRUIT.

The instruction of the recruits is presumed to require nine months; immediately after joining the regiment or depot, they are placed under the charge of monitors, selected from among the most steady and intelligent old soldiers.

1*st month.* The recruits are taught certain religious duties and the obligations of their new vocation. The monitors impress upon them the advantages of irreproachable conduct, and the consequences of negligence, evil disposition, and crime. They are made acquainted with all parts of a soldier's uniform, how to wear, and keep it in order.

2*d month.* They are taught how to clean a horse; are made acquainted with the names, object, and manner of using the different parts of the horse equipment; are taught how to place the saddle, (without the pack,) first on a wooden horse, afterwards on the animal itself; to clean their arms and take them to pieces; and they commence chanting the signals.

3*d month.* They are taught the first principles of dismounted drill, beginning with the facings and marching; to load without the motions; the *principles* of the skirmish drill, and of duty at the advanced posts, whether on foot or mounted, according to the following system:—

1. The instruction commences with the signals and the movements of skirmishers without arms; when they have learned to load without the motions, their fire-arms are given to them when learning the duties of advanced posts.

2. The most simple signals, such as "common time," "right turn," &c., are employed at first, afterwards passing to the more difficult.

3. In all the lessons the proper progression is observed, never advancing to any new lesson until all that precedes is comprehended.

4. After a certain amount of preliminary instruction, the recruits are divided into classes, or squads, according to their progress.

5. In the more advanced squads, the recruits will have their positions in the ranks changed, that they may learn the duties of all positions.

6. To complete the instruction in the duties of advanced posts, squads will be placed in front of each other, that the men may understand the position of the enemy and the manner of applying what they have been taught.

4th month. The instruction of the preceding month is continued by drilling the recruits, on foot, at the rank and platoon drill for mounted troops. At the beginning of this month they are taught the first principles of equitation with the snaffle, each man always having the same quiet, well-broken horse. The men are not required to maintain a correct seat in the first lessons, and the observation of the principles is insisted upon only when they can sit the horse without fear of falling off, and have acquired a certain amount of self-confidence.

5th month. Equitation with the snaffle is continued. The men are taught the facings and marching on foot with arms; the use of arms on foot, beginning with the sabre, then passing to the fire-arms, and finally to the lance—for troops armed with that weapon.

6th month. The instruction in taking apart and putting together the fire-arms is completed. Equitation with the curb, without arms, is commenced by all sufficiently instructed in riding with the snaffle. They are at the same time taught the manner of bitting a horse, packing the valise and cartridge-box, and saddling up with the complete pack.

7th month. Equitation with the curb, with arms.

8th month. Full instruction in the rank, platoon, and skirmish drills, with arms and mounted.

9th month. Use of all arms, mounted.

After this month the recruit is occupied in perfecting himself in the instruction prescribed for the preceding months.

The progression herein prescribed is to be carefully observed; great care is to be taken not to exact too great precision at first, in order not to disgust the recruits. Each drill should last not longer than from one hour to one hour and a half. Great care must be exercised in the choice

of instructors, who should unite patience with knowledge, and possess the faculty of giving clear explanations.

During the first six months the recruits are to be instructed at least twice a week by the chaplain in their religious duties, such as the Lord's Prayer, the Ten Commandments, the Apostles' Creed, the Psalms, &c. In detached squadrons the religious instruction is given by the sergeants.

MANÈGE RIDING.

This should be limited to the actual necessities of the service, and by the natural capacity of the horse; therefore more is required of the non-commissioned officers than of the privates, because the former have the best riding-horses. The non-commissioned officers are taught—

1. The walk.
2. The trot; (*a*) the common trot, and (*b*) the trot out.
3. The gallop, on either foot.
4. The charge.
5. To rein back.
6. The right and left turn, right about and left about turn, in place.
7. The passage to the right and left.
8. The turns and abouts, at all gaits; at a gallop, both true and false.
9. To ride in circle to right and left, at all gaits.
10. To circle back to rear on same track, at all gaits; at a gallop, both true and false.
11. To change direction across the riding-hall, at all gaits.
12. To change foot when galloping on a straight line.
13. To leap ditches and fences.

The privates are taught every thing prescribed above, with the following exceptions: they are not required to change foot at a gallop, nor to gallop false; it is only at a walk and trot that they ride in circle, circle back to rear on the same track, and change direction in the riding-hall. Nevertheless, the privates having the best horses should receive the instruction prescribed for the non-commissioned officers, as far as the strength and fitness of the horses and the aptness and intelligence of the men will permit. Commanders of troops should never require of the men more than is prescribed in these instructions, and should never lose sight of the preservation of their horses; for a horse in good order, although less perfectly broken to the rules of manège riding, is preferable to one perfectly instructed in all these rules, but broken down.

The recruits are carried through the course indicated above, at first with the snaffle, afterwards with the curb. The squads are made as small as the available number of instructors will permit, and the movements in the riding-hall are few in number and simple in kind, being limited to those actually necessary for the purpose in view.

THE GAITS.

There are three kinds of gaits: the walk, trot, and gallop.

The trot is of two kinds; (*a*) the common trot, (*b*) the trot out.

The charge is the acceleration of the gallop to the utmost power of the horse.

At a walk the horse travels about 3½ miles per hour; at the common trot, 6⅔; at the trot out, 9½; at the gallop, 8.

EQUITATION.

The instructor must never allow the recruit to pass from one lesson to another until he fully understands and can execute all that precedes. When the recruit has learned how to arrange his equipment, to take care of a horse, to saddle and bridle him, he takes his first lessons in riding, on a quiet, well-broken horse. The first lessons are given with the snaffle; the man is to be in undress uniform, without arms or accoutrements, the horse without schabraque, but with a surcingle; in the first lessons with the curb the recruit is without arms or accoutrements, then with both, and finally with the schabraque and full pack. In the beginning the recruit is required to ride with stirrups somewhat shorter than the proper length, that he may acquire confidence and firmness in his seat, without which the fear of falling from his horse renders him inattentive to the explanations of the instructor. In the course of time, as he progresses, the stirrups are lengthened, and finally he is required to ride without them, until he acquires a perfectly firm seat; then he is again obliged to ride with stirrups an inch too long, and is thus, in the course of several lessons, brought by degrees to the prescribed length.

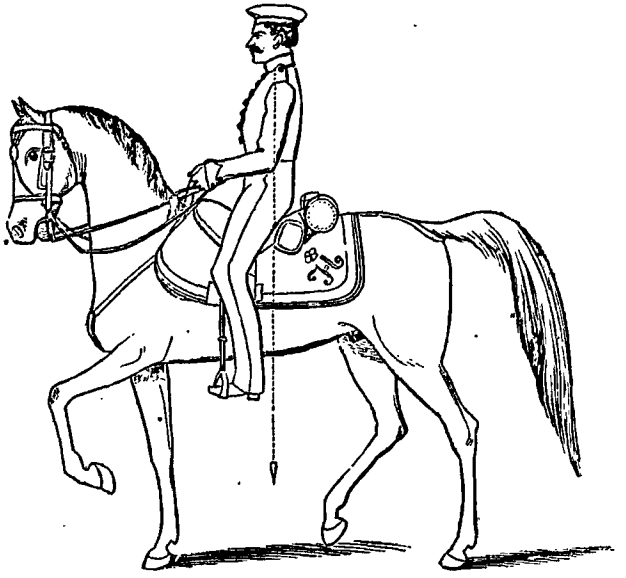
It is necessary to explain to the recruit that he should not press hard upon the stirrups, or thrust them forward, but allow them to hang vertically; also, that the bottom of the stirrup should never be under the hollow of the foot, but that the first joint of the great toe should be against the inner side of the stirrup; in other words, the ball of the foot rests on the stirrup. Spurs are given to the recruit when he is fully confirmed in his seat, with and without stirrups.

THE SEAT.

The body of the rider is divided into three parts, of which two are movable and one immovable: one of the first consists of all the upper part of the body, down to the waist, the other of the lower part of the legs, from the knee down; the immovable portion is from the waist to the knees. (Fig. 5.) The cavalry soldier should sit square on the middle of the saddle, the upper part of the body presenting a free and unconstrained appearance, the chest not much thrown forward, the ribs

resting freely on the hips, the waist and loins not stiffened, and thus not exposed to tension or effort from the motions of the horse; the upper part of the body should lean slightly to the rear, rather than forward; the thighs, inclining a little forward, lie flat and firmly on the saddle,

Fig. 5.



covering the surcingle, of which only a small part, behind the knee, should be seen; the lower part of the leg, hanging vertically from the knees, touches the horse, but without the slightest pressure; the toes are pointed up, without constraint, and on the same line with the knees, for, if the toes are turned outward, it not only causes the horse to be unnecessarily pricked by the spurs, (especially when marching in line;) but the firmness of the seat is lost; the heels should be $\frac{7}{8}$ (seven-eighths) of an inch below the toes, and the stirrups so adjusted that, when the rider raises himself on them, there may be the breadth of four fingers between the crotch and the saddle; to make this adjustment, when the recruit has acquired a firm and correct seat, he should, without changing that seat, push the bottom of the stirrup to the hollow of the foot, and then, with the foot horizontal, feel a slight support from the stirrup; when this is accomplished, he replaces the foot properly in the stirrup, and the heel will then be $\frac{1}{4}$ of an inch below the toes.

To give the recruit a correct seat, the instructor, having caused him to mount, seizes the lower part of his leg, and stretches it straight towards the fore-quarters of the horse, so as to bring the buttocks of the rider

square on the saddle; then, resting one hand on the man's knee, he seizes the lower part of the leg with the other, and carries back the thigh and knee so as to bring the crotch square on the saddle, the thighs covering the surcingle, the lower part of the leg, from the knee down, also over the surcingle, and sees that the recruit does not sit too much on his crotch, but has his buttocks well under him. He then explains to the recruit that the firmness of the seat consists in this: that the rider grasps the horse with his legs; that both thighs press equally upon the saddle, in conformity with the movements of the body; and that the general movements of the body and thighs must conform to those of the horse. To spare the horses, and explain more readily to the recruit the principles of the seat, he should at first sit upon a wooden horse, on which a saddle is secured, (Fig. 6;) on this he should learn to carry the thighs back, without leaning the body forward; at the same time he is taught how to hold the feet, without allowing him to place them in the stirrups, for this is one of the most essential conditions for a good seat.

Fig. 6.

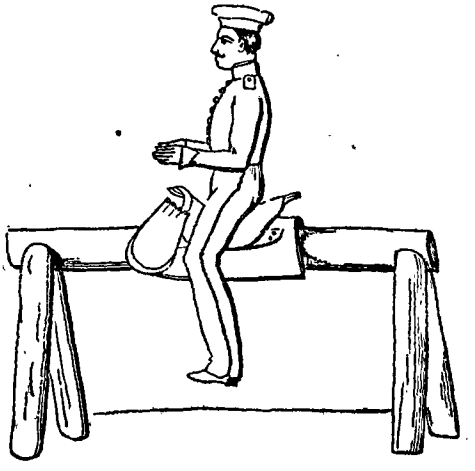


Fig. 7.

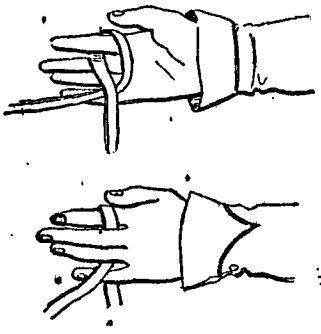
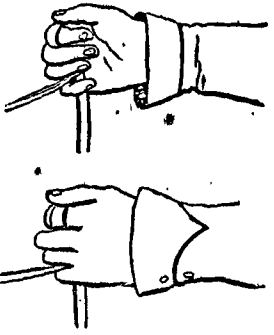


Fig. 8.



Position of the hands and arms when riding with the snaffle.

Both arms free, and without the slightest stiffness in the shoulders; the elbows bent; the upper part of the arms a little forward of the ver-

tical; the forearms resting against the sides, without pressure; both hands raised a little above the elbows, but not higher than the eyes of the horse; the hands five or six fingers' breadth apart, the outer hand higher than the inner; the units on the prolongation of the forearms; the thumbs on top, and not turned inwards; the manner of holding the reins is shown in Figs. 7 and 8.

Position of the hands and arms when riding with the curb.—(Fig. 5.)

The left arm free, and without the slightest stiffness; the elbow bent, and on the vertical line from the shoulder to the hip; the forearm touches the side, without pressure; the hand in the prolongation of the forearm, and two or three fingers' breadth above the pommel; the curb-reins pass upward through the hand, and over the forefinger, covered by all the four fingers, the nails opposite the bottom of the jacket, and in such a position that the rider can see the little-finger nail by casting his eyes on the hand; the snaffle-reins pass over the forefinger, and downwards through the hand, lying flat in the hollow of the hand; the thumb presses on top of the reins; the right hand rests, with the knuckles, on the seam of the pants, on the right thigh, seven inches below the hip, the fist closed, except the thumb, which lies on the seam, pointing upwards; the elbow on the line of the shoulders.

For the lessons with the snaffle, the horse is conducted to the ground without passing the reins over his head, they are passed over just before placing the left foot in the stirrup; in the lessons with the curb, the horse is conducted to the ground with the reins already passed over the neck; in both cases the reins are held in the left hand while mounting.

In the first lessons with the curb, the curb-chain is hooked on the ground, under the direction of the instructor; it is of such a length that two fingers may be laid flat between it and the chin.

All individual turns and abouts, from a halt, are made by turning the horse on his hind-legs as a pivot; in wheels by platoon, or by squadron, on a fixed pivot, the pivot-man turns in this manner. Turns on a march are made on an arc with a radius of three yards.

THE DRILL IN SINGLE RANK.

This is commenced when the men are well instructed in the individual riding drill; from six to fifteen men are formed in one rank, with a non-commissioned officer or old soldier on each flank. The recruits first execute this drill on foot, and are not required to execute it on horseback until they understand its principles fully. When mounted, the men are at first placed two yards apart, and as they progress the files are closed in, until they touch stirrups, towards the guide. The instruction is commenced in open order, to accustom each man to observe the rules for

moving straight forward, to oblige him to conduct his horse independently of his neighbor, and to force him to pay more attention; for, in close order, the men, by blindly following the movements of their comrades, might execute many movements satisfactorily without understanding them, and it would be impossible for the instructor to ascertain the proficiency and progress of each man. Every movement should be executed first at a walk, afterwards at the other gaits. The recruits should be mixed with old soldiers in the ranks, to prevent mistakes from extending through the whole rank; but the instructor must watch carefully that the old soldiers do not prompt the recruits.

At the commencement of every drill in single rank, the recruits should be required to execute some of the lessons of the individual drill; so that correctness of riding, and facility of executing the movements in close order, may always be preserved.

The single rank drill comprises all the movements of the platoon drill that can be executed in one rank.

THE USE OF THE SABRE.

This is one of the most important elements in the instruction of the cavalry soldier; for the sabre is the arm common to all cavalry.

The recruit should go through the whole exercise not less than once a week.

The rules for the use of the sabre are divided into two parts: (*a*) the manual; (*b*) the sabre exercise.

The use of the sabre is taught by means of commands and numbers. The commands of execution are called *times*, and these times are subdivided into particular movements called *motions*. At the commencement of the instruction, the instructor calls the numbers and executes the motions himself; when the recruit becomes accustomed to the use of the weapon, he is obliged to execute the motions and call the numbers simultaneously with the instructor; after that, the recruit calls the numbers and executes the motions for himself; finally, he executes the motions without calling the numbers.

The use of the sabre is first taught to single men on foot, then by uniting several men, and finally on horseback.

THE SABRE MANUAL.

This is so similar to that in use in the United States service as to render it unnecessary to describe it in this report, with the exception of two peculiarities, viz.: when the sabre is at a carry, both the little finger and that next to it are outside of the gripe; there is a position of reversed sabre, for funerals, as follows: the blade passed between the left arm and the body, point to the rear, edge to the left, the flat of the blade resting

on the left forearm, close to the guard, the gripe held lightly by the right hand, the blade horizontal.

THE SABRE EXERCISE.

This is divided into two parts, the first in *open order*, the second in *close order*. The first part is subdivided into: (*a*) the sabre exercise *for the attack*; (*b*) that *for the retreat*.

I. THE SABRE EXERCISE IN OPEN ORDER.

A. In the attack.

The instruction should be at first given to single men, or small squads, on foot; afterwards, in the same manner, mounted; first at a halt, then in motion—*i.e.* first at a walk, then at a trot, gallop, and charge.

The use of the sabre on foot forms no part of the duty of a cavalry soldier, and is given only as preparatory to its use on horseback, which is its proper object.

Fig. 9.

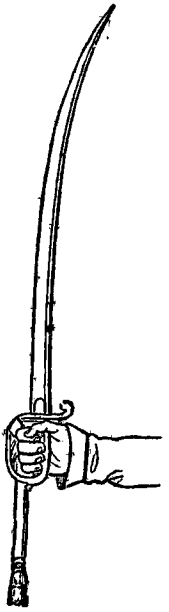


Fig. 10.

Fig. 11.

Guard.

In giving the instruction, it should be explained that the following movements constitute the basis of the system: 1, the moulinets; 2, one thrust; 3, three cuts; 4, four parries; all the other movements given are merely combinations or modifications of these.

In the motions of the sabre, it is, as a general rule, grasped by the

right hand, the four fingers encircling the gripe, the thumb on the opposite side, resting on the forefinger, (fig. 9;) but if the soldier is to thrust, he places the thumb on the back of the gripe, the end of the thumb against the guard.

All the motions are made from the position of "guard."

The recruit being at a carry, to cause him to assume the position of guard, the instructor commands:

GUARD.—1 *time.*

(Fig. 10.) Carry the right hand about 10 inches in front of the right hip, the blade in an oblique position, the point a little raised, the edge upwards, the back of the blade resting in the hollow of the left arm, as near the body as possible. In this position the right hand should be without the slightest effort or constraint, and should not feel the weight of the sabre, which is supported by the left arm.

(Fig. 11.) In the instruction on foot it is necessary to give the recruit a position corresponding to that on horseback; therefore, at the command, *guard,* he carries his right foot 18 inches from the left, the heels on the same line, the weight of the body supported equally on both legs, which are a little bent at the knees; at the same time he moves his left forearm and hand to the front, placing them as if holding the reins when mounted, and holds the right hand and sabre as already prescribed. This position, once taken, is maintained during the whole lesson.

The recruit returns to a carry, as in the United States sabre exercise, except that when at a carry both the little finger and that next to it are outside of the gripe.

THE MOULINETS.

The lessons in the sabre exercise are commenced with the moulinets, for the following reasons: 1, they accustom the men to the circular movements of the edge of the sabre, necessary in all the motions; 2, they give to the hand the strength and address necessary for handling the sabre; 3, they accustom the horses to the sabre.

PREPARE TO MOULINET.—1 *time.*

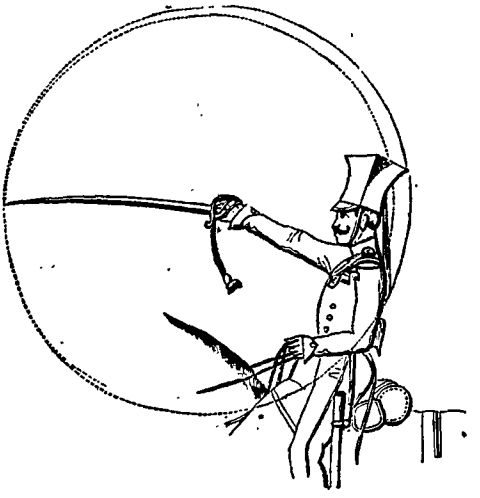
(Fig. 12.) At this command, the recruit, being at guard, extends the right arm to its full length, at the same time raising it so as to bring the hand in front of the centre of the head, as high as the eyes, point to the front, edge upwards, blade horizontal, and perpendicular to the breast.

All the moulinets are made from the position just described, and upon their completion the position of guard is resumed.

The moulinets are made to *the left* and to *the right: i.e.* the circular

movement of the sabre passes on the left or on the right side of the horse's neck.

Fig. 12.—The moulinets.



There are two moulinets: *the first* passes downwards along the body; *the second* passes upwards along the body.

The recruit being in the position of "*prepare to moulinet,*" to execute the *first moulinet,* the instructor commands:

FIRST MOULINET.

Make a moulinet to the left,—*i.e.* on the left side of the horse's neck,—raising the blade with the edge towards the body, the circular motion passing downwards along the left shoulder; and after that, make a right moulinet,—*i.e.* on the right side of the horse's neck,—raising the point, the edge towards the body, and the circular movement passing downwards along the right shoulder; then another moulinet to the left, then again to the right, and, in the same manner, alternately on each side, until the command, *guard,* when the position of guard is resumed. The recruit being in the position of "*prepare to moulinet,*" to cause him to execute the *second moulinet,* the instructor commands:

SECOND MOULINET.

Make a moulinet to the right, turning the wrist a little outwards, lowering the point, edge from the body, and passing the blade upwards, along the right shoulder; then make a similar moulinet to the left; and continue in the same manner, alternately on each side, until the command, *guard.*

In the execution of the moulinets neither the elbow nor shoulder should bend, but the movement is to be effected by the hand and wrist alone; the sabre should pass as far as possible from the horse's head, to avoid striking him, and as near as possible to the man's shoulder; the left arm is not moved.

At the commencement the instructor requires the recruit to count *one* at the end of each left moulinet, *two* at the end of each right moulinet, or the reverse; finally requiring him to accelerate the motion of the sabre to the utmost.

THE BLOWS.

Blows are of two kinds, *thrusts* and *cuts*.

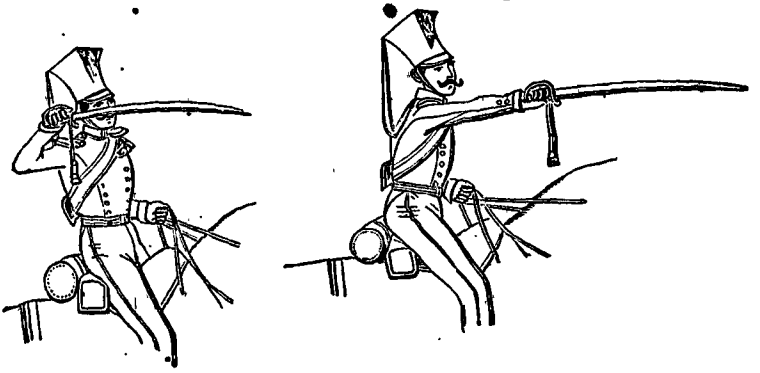
They may be given in four directions: 1. To the *right front*, *i.e.* against an antagonist obliquely in front of the right shoulder; 2. To the *left front*; 3. To the *right*; 4. To the *left*.

The thrusts and cuts should always be given together, *i.e.* first a thrust and then a cut. After each blow the position of guard is resumed.

For the blow to the *right front*, the instructor commands:

RIGHT FRONT THRUST AND CUT.—1 *time*, 4 *motions*.

Fig. 13. Right front thrust. Fig. 14.



1. At the last part of the command, which is, *cut*, turn the eyes to the right front, raise the hand to the height of the right ear, and seven inches from it, the shoulder and elbow thrown well back, the thumb on the back of the gripe, point falling a little below the horizontal, and directed to the right front, edge upwards. (Fig. 13.)

2. Extend the arm rapidly to its full length, thrusting to the right front, *i.e.* somewhat to the right of the horse's right ear; at the end of the thrust the right arm and the sabre are horizontal; the point, if any thing, a little below the horizontal. (Fig. 14.)

3. Without moving the arm, replace the thumb on the side of the gripe, turn the hand so as to bring the nails upwards, at the same time carrying the point well to the right; then, by a turn of the wrist, cut horizontally from right to left.

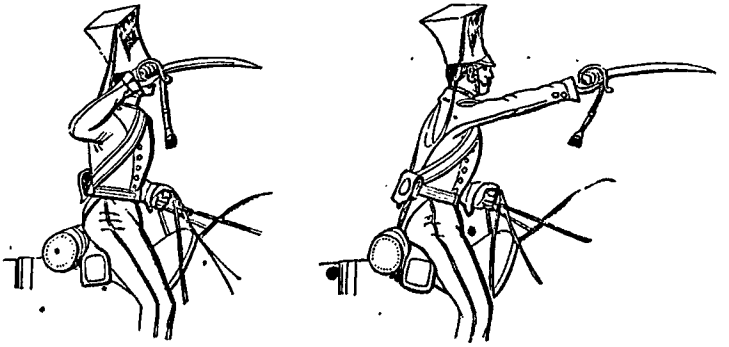
4. Turn the nails downwards, and by a turn of the wrist cut horizontally from left to right. At once resume the position of guard.

LEFT FRONT THRUST AND CUT.—1 *time*, 4 *motions*.

(Figs. 15 and 16.) Executed as the preceding blow, with the following differences: in the 1st motion the arm is raised as prescribed for the blow

to the right front, but the point and eyes are directed to the left front; in the 2d motion, thrust to the left front, *i.e.* somewhat to the left of the

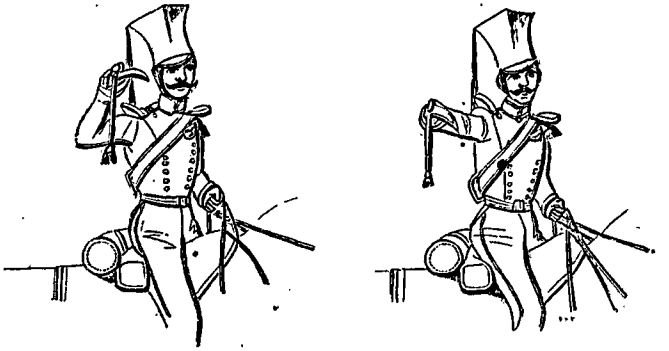
Fig. 15. Left front thrust. Fig. 16.



horse's left ear; the 3d and 4th motions, as in the blow to the right front, but given on the left side of the horse's head.

RIGHT THRUST AND CUT.—1 *time*, 4 *motions.*

Fig. 17. Right thrust. Fig. 18.



(Figs. 17 and 18.) 1. At the last part of the command, which is, *cut*, half face to the right in the saddle, at the same time place the arm and sabre in the position of first motion of right front blow, except that the eyes and point are directed to the right.

2. Thrust to the right, in a direction as nearly as possible perpendicular to the side of the horse.

3 and 4. As in the blow to the right front, except that the cuts are made in a direction to the right of the horse, and that, on resuming the guard, the recruit will sit straight in the saddle.

LEFT THRUST AND CUT.—1 *time*, 4 *motions.*

Executed as the preceding blow, with the difference that it is made on the left side of the horse; therefore, in the first motion the recruit makes

a half face to the left in his saddle, and directs his eyes and point to the left, in a direction perpendicular to his horse; in the third and fourth motions he gives the horizontal cuts, as in the last blow, but on the left, and finally returns to the guard, resuming his seat square in the saddle.

THE PARRIES.

The parries are all made from the position of guard. After every parry the position of guard is at once resumed, unless it is to be followed at once by a cut or thrust.

There are four parries: (*a*) that for the right side, or the *right parry;* (*b*) that for the left side, or *left parry;* (*c*) that for the head, or *head parry;* (*d*) that for the left shoulder and rear, or *left rear parry.*

RIGHT PARRY.—1 *time,* 2 *motions.*

(Fig. 19.) 1. Grasp the sabre firmly, extend the arm to the right, the hand moving horizontally, the point at the same time describing a semicircle upwards, and, with the edge to the right, parry as strongly as possible the blow aimed at the right side.

2. Resume the position of guard.

Fig. 19.—Right parry.

Fig. 20.—Left parry.

LEFT PARRY.—1 *time,* 2 *motions.*

(Fig. 20.) 1. Raise the hand above, and about seven inches in front of, the eyes, the elbow somewhat bent, edge to the left, point downwards, and about fourteen inches outside of the horse's left shoulder, and parry as strongly as possible the blow aimed at the left side.

2. Return to the position of guard.

HEAD PARRY.—1 *time,* 2 *motions.*

(Fig. 21.) 1. Raise the arm quickly to its full length, the hand a little to the right, the sabre a little above the head, edge upwards, blade horizontal and parallel to the shoulders.

2. Resume the guard.

In this parry the sabre should be grasped with the utmost firmness, to prevent its being beaten down.

Fig. 21.—Head parry.

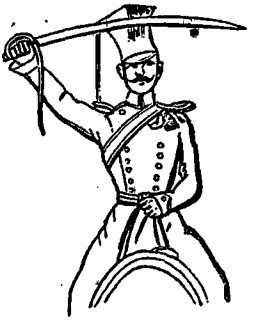


Fig. 22.—Left rear parry.

LEFT REAR PARRY.—1 *time*, 2 *motions.*

(Fig. 22.) 1. Turn the head to the left and rear, carry the right hand to the left shoulder, on which rest the back of the blade, the point to the left rear, the edge upwards.

2. Resume the guard.

PARRIES AND BLOWS.

When the recruit is well instructed in the blows and parries separately, he should be taught to combine them, in the following manner:—

RIGHT PARRY AND CUT.—1 *time*, 2 *motions.*

1. Parry to the right, as already explained.

2. Cut once horizontally from right to left, as prescribed in the third motion of the blow to the right front, and resume the guard.

LEFT PARRY AND CUT.—1 *time*, 2 *motions.*

1. Parry to the left, as already explained.

2. Cut once horizontally from right to left, as prescribed in the third motion of the blow to the left front, and resume the guard.

HEAD PARRY AND THRUST.—1 *time*, 3 *motions.*

1. Parry for the head, as already explained.

2. Place the arm and sabre in the position of the 1st motion of blow to right front.

3. Thrust to right front, and resume the guard.

THE BLOWS AGAINST INFANTRY.

The cavalry soldier, when engaged against infantry, in open order,

should endeavor to parry the bayonet on his right side, cut to the right and left, and thrust to the right.

AGAINST INFANTRY—RIGHT PARRY AND CUT.—1 *time*, 3 *motions.*

(Figs. 23 and 24.) 1. Half face to the right in the saddle; carry the right hand to the right and rear, arm nearly extended, sabre grasped

Against infantry.—Right parry.

Fig. 23.

Fig. 24.

firmly, hand as high as the head, and over the croup of the horse; nails outwards, edge to the rear, point upwards, blade vertical.

2. Lower the point towards the rear, and parry the bayonet with the back of the blade by a rapid circular movement of the sabre and arm, so that, at the end of the movement, the right hand may be in front of the left shoulder as high as the head, and 10 inches from it, the nails towards the breast, point of sabre upwards, edge to the front.

3. Bear the weight of the body on the right stirrup, bend the body well down to the right, and, by a movement of the whole arm from the shoulder, cut downwards, from the head of the horse towards the croup; at once resume the guard.

AGAINST INFANTRY—LEFT CUT.—1 *time*, 1 *motion.*

(Fig. 25.) Half face to the left in the saddle, extend the right arm to its full length, the hand opposite to and above the eyes, edge somewhat to the left, the point a little to the front; then, by a movement of the whole arm from the shoulder, cut circularly downwards, on the left side of the horse; at once resume the guard.

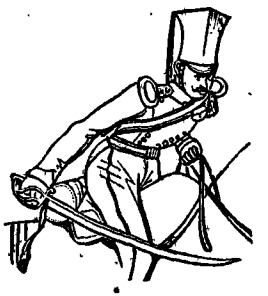
AGAINST INFANTRY—RIGHT AND LEFT CUT.—1 *time*, 2 *motions*.

1. Half face to the right in the saddle, and take the position described at the end of 2d motion of the "right parry and cut" against infantry, and at once cut against infantry, as prescribed in the 3d motion.

2. Instead of resuming the guard, at once half face to the left, and act as prescribed for the left cut against infantry; resume the guard.

Fig. 25.—Against infantry. —Left cut.

Fig. 26.—Against infantry. —Right thrust.



AGAINST INFANTRY—RIGHT CUT AND THRUST.—1 *time*, 2 *motions*.

(Fig. 26.) 1. Half face to the right in the saddle, and act as directed in the first motion of the preceding blow.

2. Bear the weight on the right stirrup, bend well down to the right, extend the right arm well downwards, and, with the back of the sabre upwards, thrust forward as nearly horizontally as possible; at once resume the guard.

In these cuts the recruit should sit firmly in the saddle, and make the half faces to the right and left quickly, easily, and without constraint.

B. The sabre exercise for the retreat.

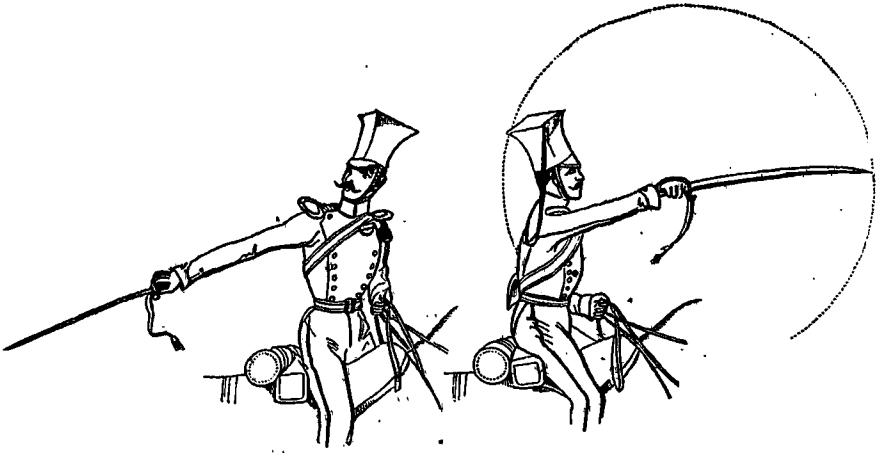
In retreat the cavalry soldier should cut his pursuer to the right rear.

RIGHT REAR CUT.—1 *time*, 1 *motion*.

(Fig. 27.) Half face to the right in the saddle, cast the eyes well to the right rear, raise the right arm so as to bring the hand opposite to and at the height of the left shoulder, edge to the front, point upwards, cut

horizontally to the rear by a movement of the sabre from left to right; at once resume the guard.

Fig. 27.—Right rear cut. Fig. 28.—Charge sabre.



RIGHT REAR—CUT TWICE.

As the last blow, except that the cut is repeated before resuming the position of guard.

TO FORM A SQUADRON FOR THE SABRE EXERCISE.

Preparatory to the sabre exercise, the squadron, whether mounted or on foot, should first of all be ordered to call off. For this purpose the instructor commands:

FOR SABRE EXERCISE—CALL OFF.

At this command, each man of the right file turns his head to the left, that his comrades may hear him, and, in a loud, distinct tone, calls out 20, (twenty;) the men of the 2d file call out 15; those of the 3d file, 10; the 4th, 5; the 5th, "*stand fast;*" the 6th, 20; the 7th, 15; the 8th, 10; the 9th, 5; the 10th, "*stand fast;*" and in the same manner through the squadron to its left flank.

These numbers signify that at the command "sabre exercise—march," (which will be explained hereafter,) each man is to march forward the number of paces he called out, *i.e.* 20, 15, 10, and 5 paces, respectively, for the first four men of every five, the fifth standing fast. The non-commissioned officers in the front rank are to move forward 25 paces; those in the rear rank are to rein back into the line of file-closers, and with them fall back 5 paces behind the rear rank. Each man turns his head to the front as soon as he has called off. If the sabre exercise is to

be performed in presence of an inspector, the calling off is done before his arrival. When the exercise is to be commenced, the front rank is marched forward 25 paces; the instructor then commands:

SABRE EXERCISE—MARCH.

At this command the men take their distances by moving forward, in each rank, the number of paces they respectively called off, as already explained.

When the exercise is finished, the instructor commands:

TO YOUR POSTS—MARCH.

At this command, the men who advanced 20 paces stand fast, the others move up, and dress on them in each rank.

The non-commissioned officers of the front rank rein back 5 paces into their places. The instructor then closes ranks by the usual commands.

During the exercise the officers place themselves 15 paces from the front rank, facing it.

THE SABRE EXERCISE IN CLOSE ORDER.

When attacking in close order, the sabre should always be carried in the position of *charge sabre.*

CHARGE SABRE.—1 *time,* 1 *motion.*

(Fig. 28.) Raise the right arm and extend it to the front, the hand opposite the right eye, the blade perpendicular to the breast, the edge upwards, the point a little raised.

To pass from this position to that of *guard,* the command is, *guard.* If necessary, the command, *carry sabres,* may be given at once, without first coming to the guard.

In close order, all the motions of the sabre are made from the position of charge sabre, and on the completion of every movement the men at once return to that position.

RIGHT FRONT THRUST, PARRY, AND CUT.—1 *time,* 4 *motions.*

1 and 2. The recruit, being in the position of charge sabre, at once thrusts to the right front, as prescribed in open order.

3. Makes the head parry, as in open order.

4. Cuts vertically downward, on the right of the horse's neck, and resumes the position of charge sabre.

LEFT FRONT CUT, PARRY, AND THRUST.—1 *time,* 4 *motions.*

1. Commence the cut by the 2d motion of the 2d moulinet: *i.e.* lower the sabre along the left side of the horse's neck, raise it along the left shoulder, cut downwards to the left front, and resume the position of charge sabre.

2. Make the head parry.

3 and 4. Thrust to the right front, and resume the position of charge sabre.

RIGHT AND LEFT FRONT THRUST.—1 *time*, 2 *motions*.

1. Thrust once to the right front.

2. Thrust once to the left front, and resume the position of charge sabre.

In close order, too much care cannot be taken to make the cuts by the wrist alone, without moving the arm; they should be made as near the horse's neck as possible, to avoid striking the next man, or his horse.

As a conclusion to the sabre exercise, all the commands are here given, in the order in which they should be taught.

Commands for the sabre exercise in open order.

Guard.	Left parry.
Prepare to moulinet.	Head parry.
First moulinet.	Left rear parry.
Guard.	Right parry and cut.
Prepare to moulinet.	Left parry and cut.
Second moulinet.	Head parry and thrust.
Guard.	Against infantry—right parry and cut.
Right front thrust and cut.	Against infantry—left cut.
Left front thrust and cut.	Against infantry—right and left cut.
Right thrust and cut.	Against infantry—right cut and thrust.
Left thrust and cut.	Right rear cut.
Right parry.	Right rear cut twice.

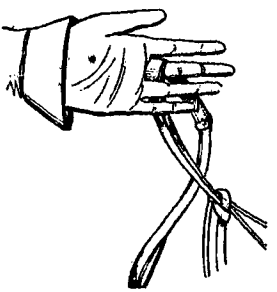
Commands for the sabre exercise in close order.

Charge sabre.	Left front cut, parry, and thrust.
Right front thrust, parry, and cut.	Right and left front thrust.

MISCELLANEOUS, FROM THE SCHOOL OF THE RECRUIT.

(Fig. 29.) When loading and firing the carbine, the snaffle-reins are knotted around the curb-reins, and allowed to hang loosely; the curb-reins are passed around the middle finger of the left hand, thus leaving the others free to manage the carbine.

Fig. 29.—Manner of holding the reins when using the carbine.



When the carbine is cast about, the butt is thrown on the right side of the horse, the left hand seizing it just above the tail-band.

Skirmishers armed with lances, when using the carbine, carry lances at a rest and sabres in

the scabbards; skirmishers who have no lances have the sabre drawn and suspended from the right wrist by the sabre-knot when using their carbines.

THE CHARGE.

At the command, *charge*, the rider, without changing his seat, presses a little harder on the stirrups, throws the weight of his body backwards, and prepares the horse, as explained, for the gallop; then, giving him a free rein, he urges him to his greatest speed by the pressure of his legs and spurs.

SCHOOL OF THE PLATOON.

In the tactics, the platoon is supposed to consist of 12 or more files, always in two ranks. The rear rank is one pace (3 feet) from the front rank, and the file-closers at the same distance behind the rear rank.

In addition to the 12 files, there are supposed to be with the platoon 1 officer as instructor, 1 non-commissioned officer on each flank of the front rank, 2 non-commissioned officers as file-closers, and 1 trumpeter.

Preparatory to mounting, the platoon being formed with closed ranks, the men call off in each rank by twos.

At the command, *prepare to mount*, Nos. 1 of the front rank lead forward 4 paces, (of 3′ each,) Nos. 2 of the rear rank, and the file-closers, fall back the same distance, the non-commissioned officers on the flanks of the front rank lead forward 8 paces. After mounting, upon the command, *form ranks*, the Nos. 2 of each rank move up alongside of Nos. 1, the non-commissioned officers resume their proper places, and the rear rank is closed up on the front rank.

The dismounting is effected in a similar manner.

The men, being mounted, call off in each rank from right to left, and then in each rank by threes.

Column may be formed: by file, by twos, by threes, and by sixes.

In the column by twos, each rank consists of the men of the same file, each rear-rank man riding alongside of his front-rank man.

In the column by sixes, each rank consists of the men of the same set of threes, the three rear-rank men riding abreast of their three front-rank men.

(Fig. 30.) To break the platoon by file, from a halt: at the preparatory command, the right guide places himself in front of the 1st file, the trumpeter in front of the right guide; at the command, *march*, the trumpeter, guide, and first file move straight forward; the men of the other files, in succession, advance one pace, halt, turn to the right, (on the horse's hind-legs,) move to the right in the direction of the front of the platoon, and turn individually to the left when arriving behind the head of column.

Fig. 30.

Fig. 31.

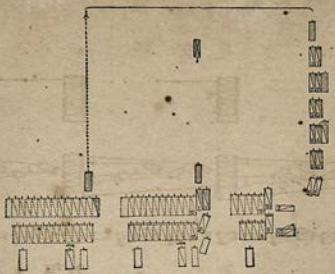
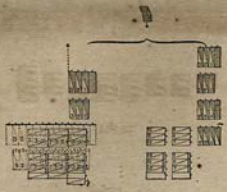


Fig. 32.

Fig. 33.



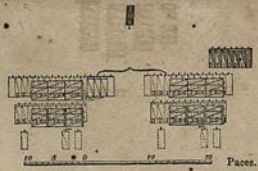


Fig. 34.

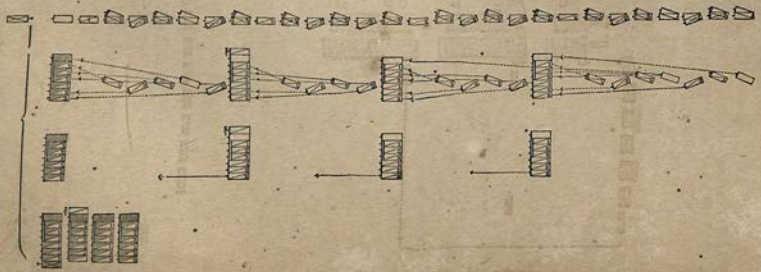


Fig. 31 shows the manner of breaking by twos.

To break by threes, the first set of threes march straight forward, the rest of the men wheel to the right by threes in each rank, move forward, and, upon arriving behind the head of column, wheel to the left by threes, in each rank. Fig. 32 shows the formation of a platoon of 11 files, in column by threes.

Fig. 33. To break by sixes, at the preparatory command the right guide passages 3 yards to the right, the rear-rank men of the first set of threes oblique to the right and place themselves on the alignment of the front rank, between the right guide and their front-rank men; at the command, *march*, the right guide and the first set of threes (formed in one rank, the rear-rank men on the right) move straight forward, the rest of the men wheel to the right by threes in each rank, move forward, and wheel to the left by sixes when the croups of their horses are on the prolongation of the left flank of the column.

Fig. 33 shows the formation of a platoon in column by sixes, the platoon consisting of 11 files.

On the march, the platoon is broken into column according to the same principles; except that to break by file or by twos, in doubling the gait, the right file moves straight forward at the new gait, and the rest of the platoons at once oblique to the right, each file entering the column in succession.

All these movements are executed by the left flank, by inverse means. When the platoon, broken into column, is to form to the front, on the right or left, or to the right or left into line, the leading subdivision marches platoon distance before halting.

The platoon being in column by file, right in front, at a halt, to form column by twos: at the command, *march*, each front-rank man moves forward his horse's length and halts; each rear-rank man moves up on the right of his front-rank man and halts; then the column closes up on the leading subdivision.

To form from column by file into column by threes: at the command, *march*, Nos. 1 of both ranks move forward a horse's length and halt; Nos. 2 and 3 of each rank oblique to the left, and form on the left of Nos. 1; then the column closes up on the leading set of threes.

Fig. 34. To form from column by file into column by sixes: at the command, *march*, Nos. 1 of the front rank move forward a horse's length and halt; Nos. 2 and 3 of the same rank oblique to the left, and form on the left of Nos. 1, in the order of their numbers; the rear-rank men oblique to the right, and form on the alignment of the front rank, also in the order of their numbers, from right to left; the ranks of sixes, thus formed, then close up on the head of the column.

If the column is in march, the front is increased according to the same

principles; *i.e.* each new subdivision is formed at the original gait; then those in rear close up on the head of column by doubling the gait.

The front is decreased, whether the column is in march or at a halt, in a manner similar to that pursued in the United States tactics.

SCHOOL OF THE SQUADRON.

The squadron is divided into two half squadrons and four platoons. The platoons are numbered from right to left, and each platoon preserves its original number, whatever position it may occupy in line or in column. Each platoon is counted off: (*a*) by twos; (*b*) from right to left; (*c*) by threes; this is done under the direction of the commandants of platoons, before the squadron is formed. If there are odd files in the 4th platoon, they are posted on its right.

COMPOSITION OF THE SQUADRON.

The minimum strength is as follows: 1 captain, commanding; 4 commandants of platoons; 16 sergeants; 3 trumpeters; 96 corporals and privates. As a general rule, the average strength of the squadron is 120 corporals and privates, or 60 files.

POSTS OF THE OFFICERS AND SERGEANTS.

Fig. 35.

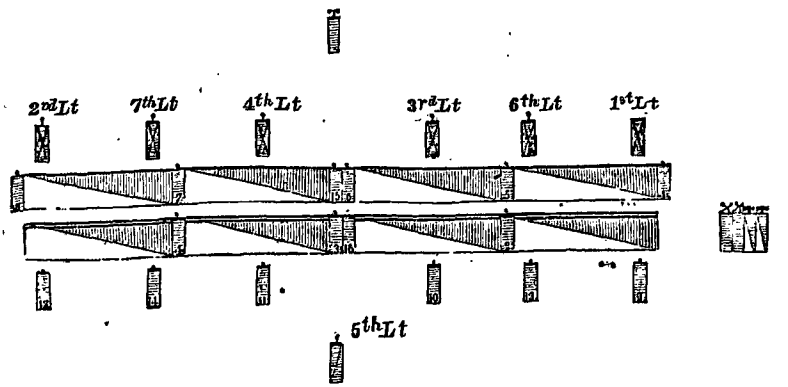


Fig. 35. The squadron being deployed, the officers are posted as follows: the captain commanding, at platoon distance in front of the centre of the squadron; the commandant of the 1st platoon, 1 pace in front of the 2d file from the right of his platoon; the commandants of the 2d and 3d platoons, 1 pace in front of the centres of their platoons; the commandant of the 4th platoon, 1 pace in front of the 2d file from the left of his platoon; if there is a 5th subaltern, he is posted, as a file-closer, 3 paces in rear of the centre of the line of non-commissioned file-closers; if there is

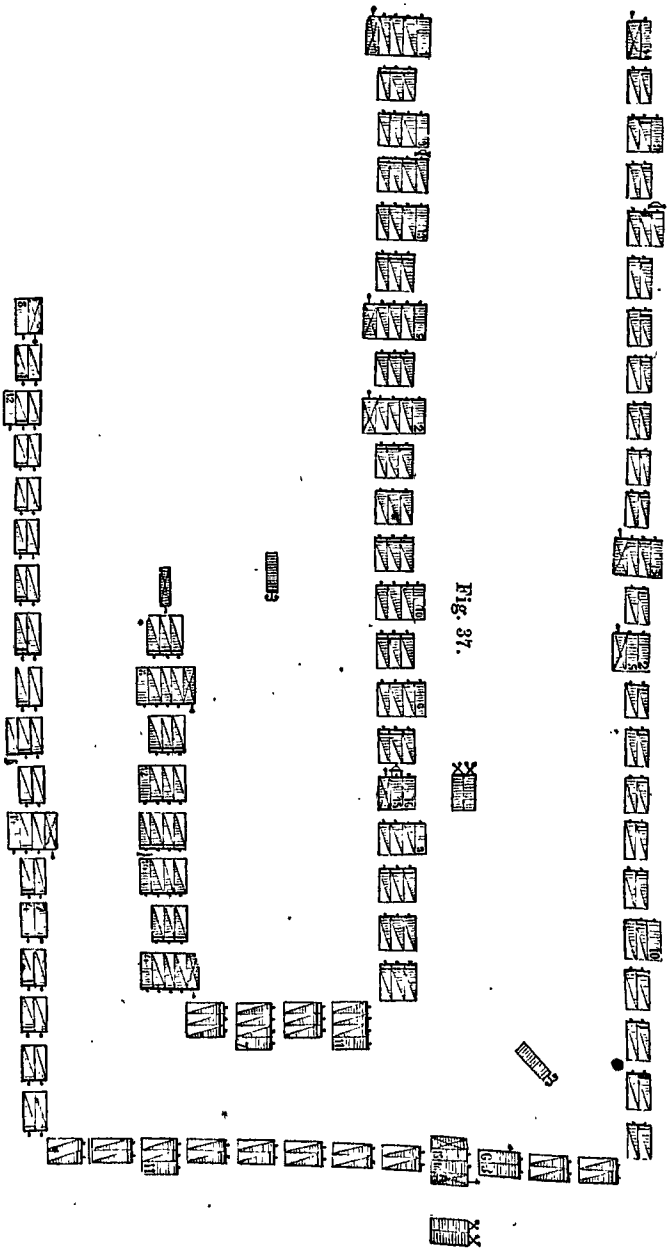


Fig. 36.

Fig. 37.

a 6th subaltern, he is posted 1 pace in front of the 2d file from the left of the 1st platoon; if there is a 7th subaltern, he is posted 1 pace in front of the 2d file from the right of the 4th platoon.

Subalterns command platoons according to their ability, and not according to seniority; the 1st and 4th platoons being considered the most important.

If there are not enough officers present to supply commandants of platoons, the deficiency is made good by the most capable sergeants.

If there is no officer to act as file-closer, this position is not filled by a sergeant.

Fig. 35 gives the positions of the different sergeants in line; No. 15 is the standard-bearer, in standard-squadrons, and No. 16 is his assistant; in squadrons without standards, No. 15 is posted in rear of the 2d file from the left of the 2d platoon, and No. 16 in rear of the 2d file from the right of the 3d platoon; the non-commissioned file-closers are 1 pace behind the rear rank. In standard-squadrons having but 14 sergeants, No. 13 is the standard-bearer, No. 14 his assistant.

No. 6 carries the squadron guidon.

There must always be at least one file-closer for every platoon; if there are not enough sergeants for this purpose, corporals are detailed to supply the deficiency.

The sergeants may be posted, by the commander of the squadron, without regard to their relative rank.

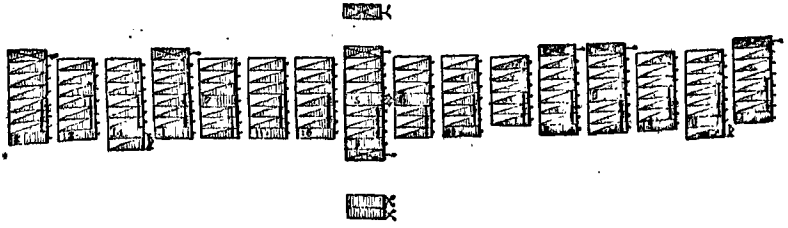
Trumpeters are posted, either in one rank, at five paces on the right of the rear rank, or in rear of the 4th files from the right of the 1st, 4th, and 2d platoons; the latter position in preference.

In the engravings accompanying this report, extracted from the Russian tactics, two drummers and two trumpeters are usually represented; these drummers refer only to the dragoon regiments.

The men armed with rifled carbines, (four in each platoon,) who are to act as skirmishers, always form the flank files of the platoons; these files should always be full.

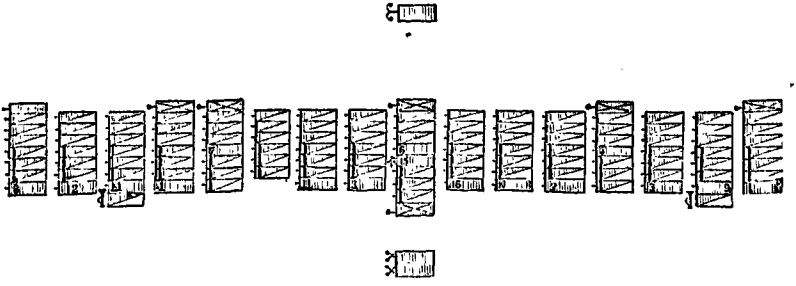
Figs. 36 to 42 will sufficiently explain the formation of a squadron in column by twos, threes, sixes, platoons, and half squadrons, as well as the posts of the officers and non-commissioned officers.

Fig. 38.



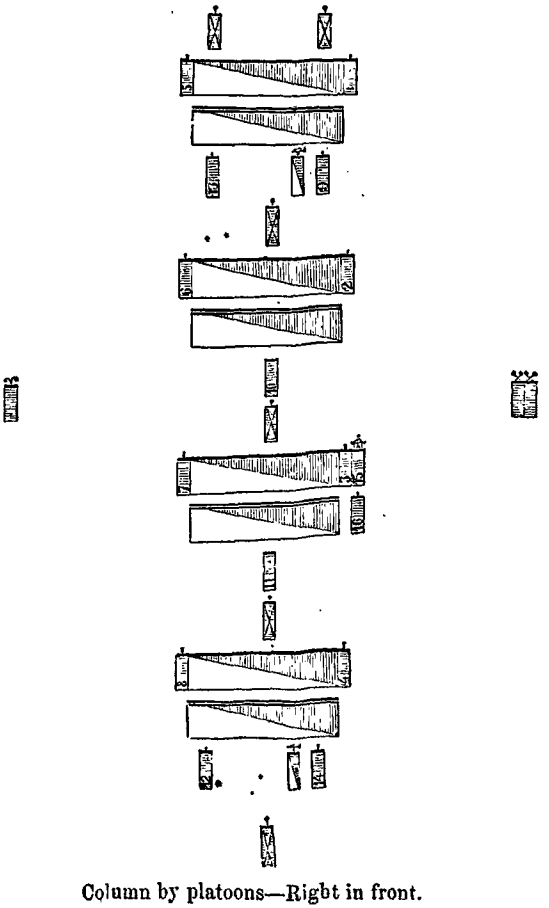
Column by sixes—Right in front.

Fig. 39.



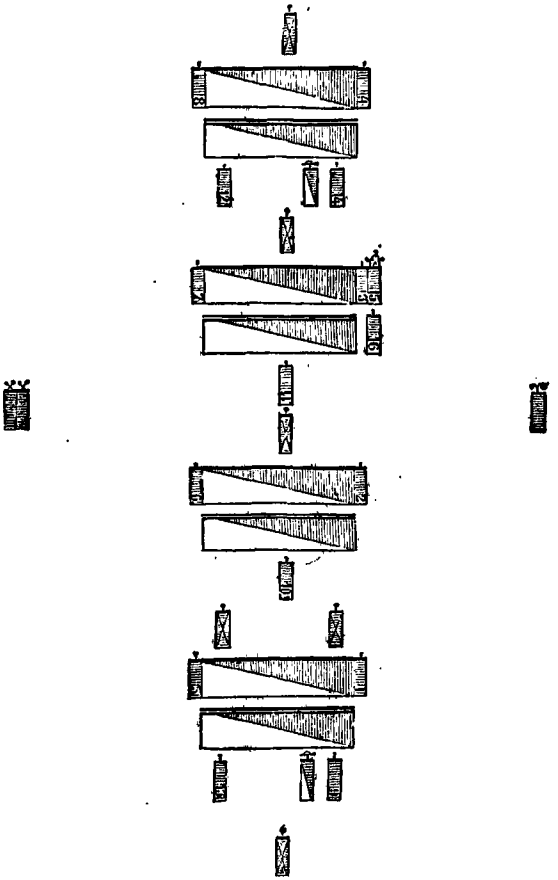
Column by sixes—Left in front.

Fig. 40.



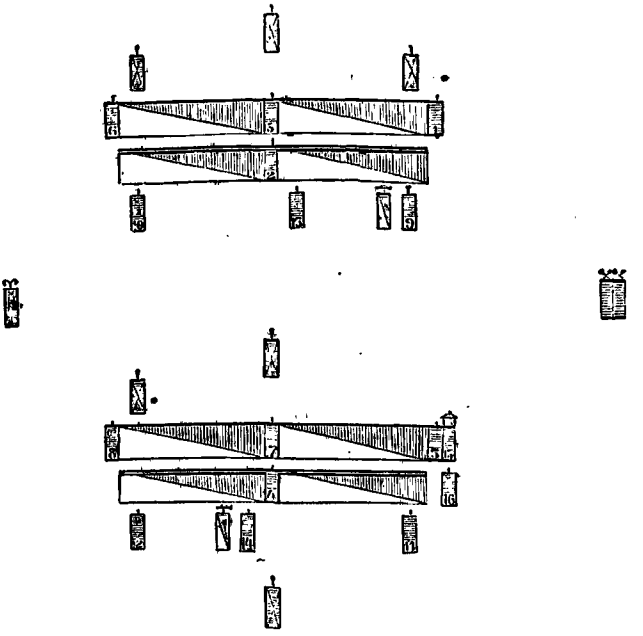
Column by platoons—Right in front.

Fig. 41.



Column by platoons—Left in front.

Fig. 42.



Column by half squadrons.

Fig. 43.

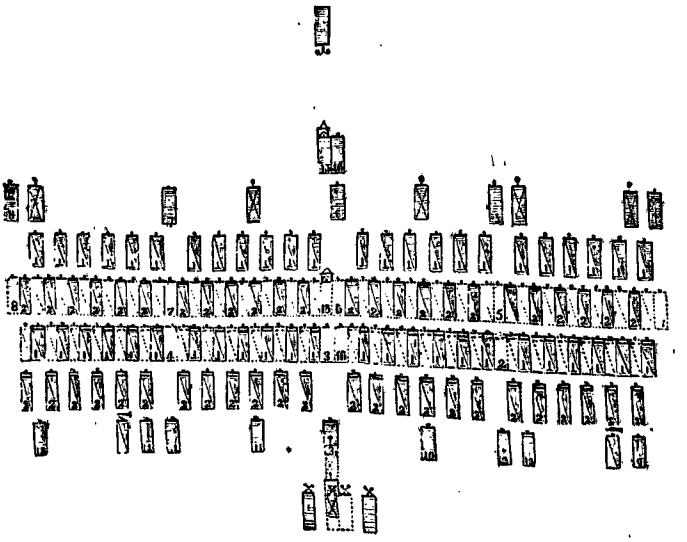


Fig. 44.

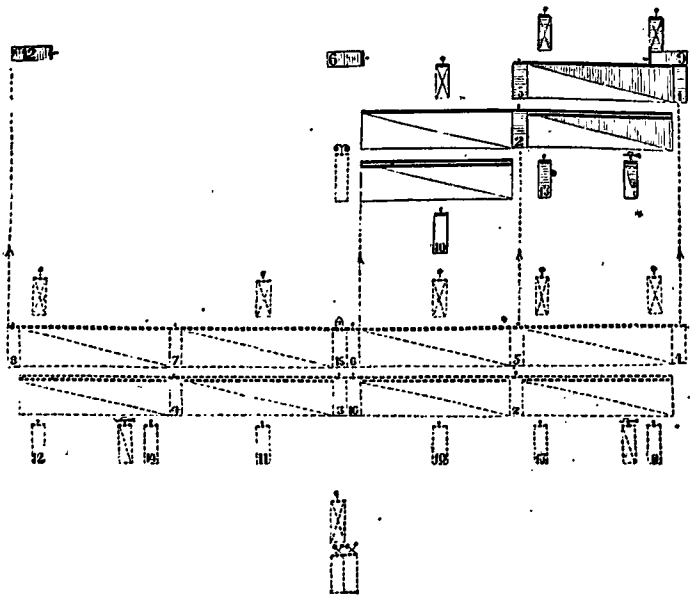
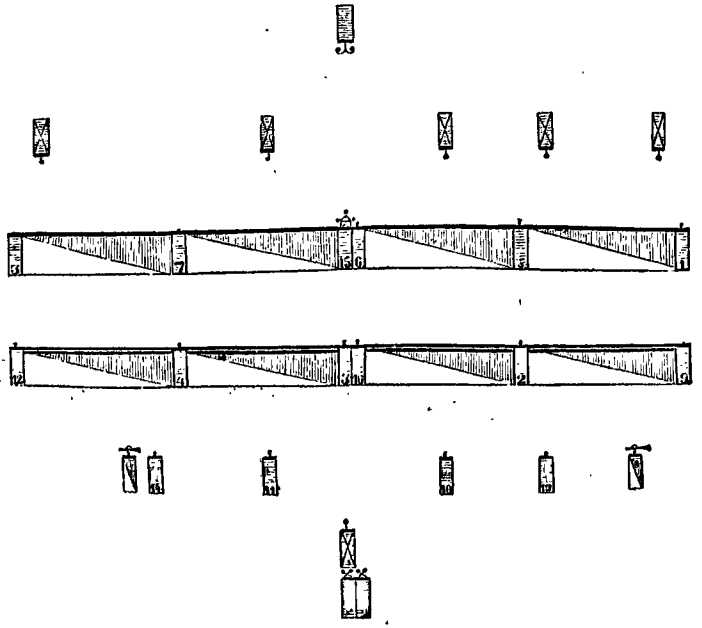


Fig. 45.



TO MOUNT AND DISMOUNT THE SQUADRON.

To mount, the squadron is formed with closed ranks, all the officers dismounted except the commander of the squadron. Fig. 43 shows the positions of all persons, both in mounting and dismounting; the principles already explained in the school of the platoon are observed in this case.

OF VOCAL COMMANDS.

These are of two kinds: those of preparation, and those of execution.

The first are uttered slowly, every syllable being clearly pronounced; the latter are uttered briefly and abruptly.

The commander should modulate his voice in proportion to the number of men who are to execute the command, so that every word may be heard. In the text, the tonic accent (1) is placed over the syllables that are to be accented and uttered slowly; the hyphen (-) indicates the passage from the preparatory to the executive command.

Commands indicating the gaits are always given with the cautionary command, and before the word—march.

The commanding officer should always designate the gait.

PRINCIPAL GUIDES.

Sergeants Nos. 6, 9, and 12 are the principal guides of the squadron; all the sergeants should, however, be instructed in the duties of principal guides, that they may be able to fulfil them in case of necessity.

Fig. 44 shows the positions of the principal guides in the alignment of a squadron, to the right, by platoons.

In mounted squadrons the men are arranged, according to the height of men and horses, from right to left in the right half squadron, and from left to right in the left half squadron.

The front rank is composed of the men who are the best looking, best riders, and most prompt, with, as far as possible, the best and most thoroughly trained horses. Prompt and well-instructed men, with the best horses, are placed on the flanks of platoons and threes.

SQUADRON WITH OPENED RANKS.

The ranks may be opened either by causing the front rank to move forward, or the rear rank to rein back.

Fig. 45 shows the formation of the squadron with open ranks; the commandants of platoons, facing the squadron, are six paces from the front rank; the ranks six paces apart; the file-closers six paces behind the rear rank

Columns by files, twos, threes, and sixes, are formed and broken as prescribed in the school of the platoon.

The front of the column may be increased either in all the platoons at

the same time, or, beginning with the head of the column, by the different platoons in succession. The front of the column is decreased always by the platoons in succession.

When the squadron is in line, to break it, by the right, by platoons to the front, the 1st platoon marches straight to the front, all the others wheel to the right on a fixed pivot; the 2d platoon then wheels to the left and follows the 1st; the 3d and 4th move forward and wheel to the left, as each arrives where the 2d wheeled to the left.

MARCHING IN LINE.

A. When marching in line, the alignment of the squadron will depend upon that of the officers in front of the platoons; it is therefore required that these officers should be frequently exercised in marching in line, at the proper intervals, to the front and obliquely, at all gaits; since absent officers are to be replaced by sergeants, the latter are also exercised in the same manner.

B. Before marching in line with closed ranks, the squadron is exercised with the ranks opened to squadron distance, the front rank commanded by the senior subaltern, the rear rank by the second subaltern.

C. The squadron is exercised at marching with the flank files of the platoons and the intermediate sergeants, thrown forward about 20 paces.

D. In starting or changing gait, the guide moves gently, to avoid agitation in the ranks.

E. The march in line should not be attempted at a trot until well done at a walk; after being properly done at a trot, it is executed at a gallop, the gait being changed on the march.

OF COLUMNS.

Right columns are those right in front; left columns are those left in front.

There are three kinds of columns: 1, columns with distance; 2, close columns; 3, marching columns, or columns in route.

In every kind of column the distance is measured from the fore-feet of the horses of one subdivision to the fore-feet of the front-rank horses of the next subdivision.

In a right column the guide is left, in a left column it is right.

The object of a column with full distance is that the troops composing it may form line in every direction; therefore the distance between the subdivisions must be equal to their respective fronts.

The object of a close column is, by decreasing its depth to execute movements conveniently and rapidly. Close columns are formed by half squadrons and by squadrons; the distance is 15 paces; the formation of these columns is explained in the school of the regiment.

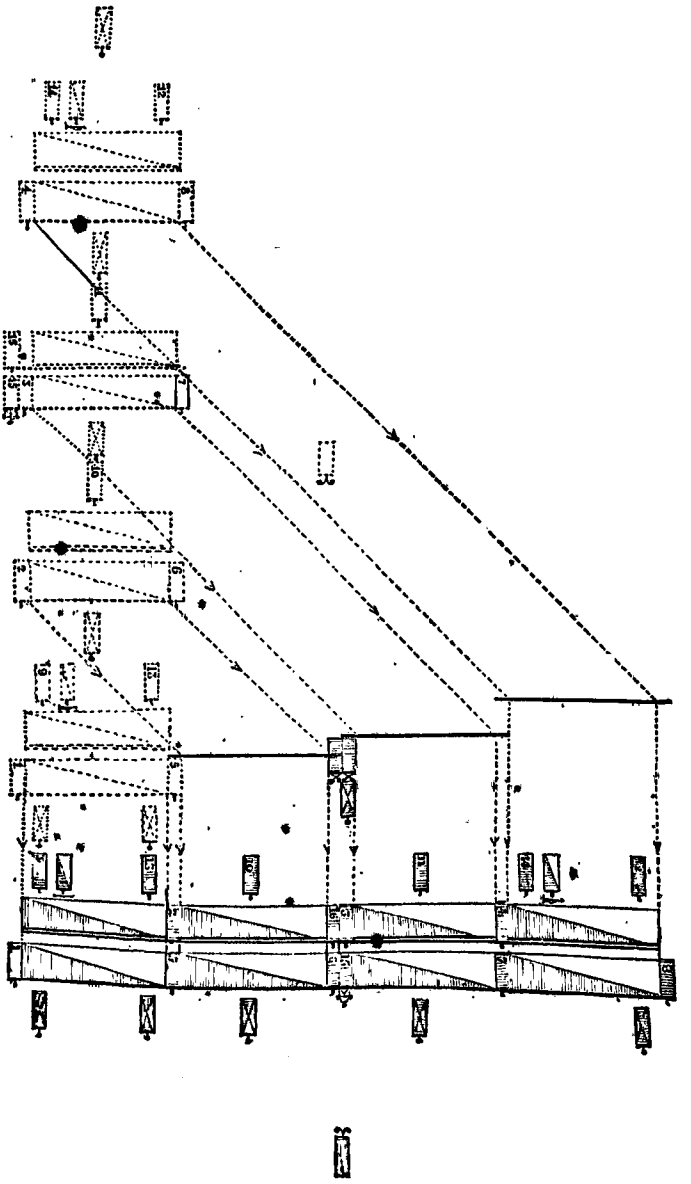


Fig. 46.

The object of a column in route is to effect a march conveniently. According to the width of the road, this column is formed by platoons, sixes, threes, twos, or files; in preference, by platoons, when the road permits.

The direction of a column in march is changed as in the United States tactics; but, in order to perfect the instruction of both ranks, the column by platoons is formed of single ranks, at platoon distance, in the first lessons.

To form from column by platoons, or half squadrons, into line to the front or rear, or to increase the front of a column by platoons, each platoon obliques, instead of making half wheels, *e.g.*:

(Fig. 46.) To form front into line from a column of platoons, right in front, the 1st platoon marches forward platoon distance and halts, the others oblique to the left, by the individual oblique march, and move to the front when opposite their respective places in line.

To form on the right or left into line, the leading platoon moves forward platoon distance, after having finished its wheel.

OF ATTACKING.—THE ATTACK, OR CHARGE, IN CLOSE ORDER.

The general rules for executing a charge in close order are the same as for an advance in line.

The command of execution for a charge is, *march, march.*

At this command the officers and the front rank charge sabre.

During a charge all commands, after that of *march, march,* are repeated by the commandants of platoons.

A charge should not extend over more than eighty paces; the nearer a regiment of cavalry can approach the enemy at a trot, the more violent will be the shock; but the farther from the enemy the command *march, march,* is given, the weaker will be the shock, and the greater the disorder among the horses. In order to save the horses, they should, if possible, before halting them after a charge, be brought down to a trot.

The charge is first taught by platoon, and afterwards by squadron. To execute the charge by platoon, the squadron commander places himself 300 paces in front of the squadron, and directs the commandant of the first platoon to execute the charge; this officer moves his platoon fifty paces at a walk, then 100 at a trot, fifty at a gallop, charges eighty paces, and halts his platoon abreast of the captain. The charge by squadron is executed in a similar manner, the captain leading the charge

At the command *trot,* or *walk,* after the charge, the officers and the front rank carry sabres.

The troops are also taught to charge directly from a halt. During the charge, at the command *march, march,* the standard-bearer falls back into the line of file-closers, the assistant behind him; at the command

halt, they resume their places in line. During the charge, the rear-rank men are to cover their file-leaders, and neither crowd up on them nor fall back.

THE CHARGE IN OPEN ORDER.

This is effected by one half squadron. (Fig. 47.)

In open order the half squadron is formed in two ranks, and occupies a front equal to that of five platoons in close order. When deployed in open order the officers and sergeants are posted as follows: the commander of the squadron always follows the movements of the half squadron detailed for duty in open order, and places himself where he deems necessary, having a trumpeter with him; if there is an officer with the squadron as file-closer, he accompanies the squadron commander, to carry his orders; the commandants of platoons are in the front rank; the sergeants are in their usual places, except that the file-closers are ten paces behind the rear rank. The other half squadron constitutes a reserve, and holds itself at 150 paces in rear of the line, deployed in open order; it never retires without special orders. The standard remains with the reserve.

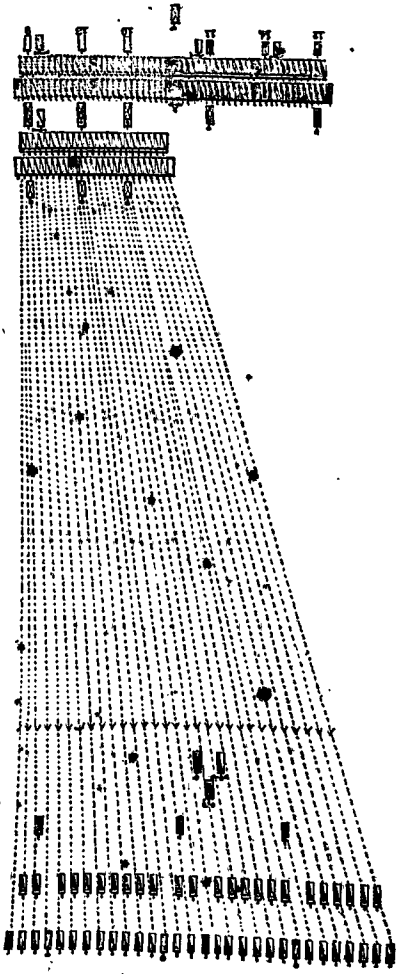


Fig. 47.—Charge in open order.

For the charge in open order the signal "attack" is sounded, and then "disperse." If the charge is to be made from a halt, then at the first signal the designated half squadron moves forward at a trot, and at the second signal the commander orders *disperse*; if the squadron is on the march when the first signal is sounded, the attacking half squadron continues moving at the original gait, while the reserve halts. At the command *disperse* the men charge sabres and disperse as follows: if it is the right half squadron which is to disperse, the right guide is the guide of the move-

ment, and moves straight forward at a hand gallop; the rest of the men gain ground to the left and front at the charging gait, until the left file of the second platoon extends to platoon distance to the left of the left flank of the reserve; (this is done to cover the intervals when several squadrons are formed in one line.) If it is the left half squadron which deploys, then the left guide is the guide of the movement, and the right file extends to platoon distance beyond the right file of the reserve. When the outer flank has extended sufficiently, the whole line moves straight forward at a charge, the men using their pistols and sabres, not paying attention to the alignment, but taking care to preserve sufficient intervals for a free use of their weapons. At the signal *halt*, they halt and dress on the centre, the rear-rank placing themselves ten paces behind their front-rank men.

The skirmishers may be assembled either on the reserve or on the guide of the line; in either case it is at full speed; and in the first case the men fall in without regard to place, merely endeavoring to get into the proper rank and platoon. The men are instructed in the charge in open order, first at a walk, afterwards at a trot, gallop, and charge.

ECHELONS.

The squadron is exercised in advancing by echelons of half squadrons, the distance between the echelons being at least equal to the front of a half squadron. The advance is by alternate half squadrons, or occasionally by both advancing, in echelon, simultaneously.

A retreat is always conducted by half squadrons, and at a walk, or trot. If the right half squadron commences the movement, it wheels to the right about by platoons, moves about half squadron distance to the rear, and again wheels by platoons to the right about; on this, the left half squadron wheels to the left about by platoons, moves squadron distance to the rear, and then again wheels to the left about by platoons. The standard remains with the left half squadron.

SKIRMISHERS.

The open order of battle is a chain of skirmishers, with a reserve in its rear. The purpose of the chain of skirmishers is to watch the movements of the enemy, to weaken and harass him by its fire, and thus to prepare the way for the success of the main body in close order, or else to cover its movements.

The reserve is to support and reinforce the chain, and to serve as a rallying-point for the skirmishers; it should therefore be in rear of the skirmishers, and follow their movements.

Commanders of parties detailed as skirmishers will employ vocal com-

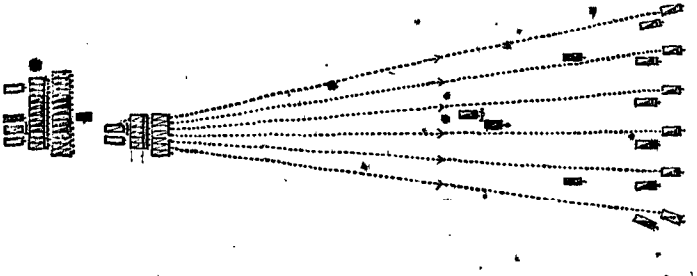
mands in preference to the trumpet signals; the latter will be employed only when the skirmishers are already deployed.

To avoid the possibility of mistakes, commanders ordering their trumpeters to sound any signal will always indicate it by its name, and not by its number.

The Russian system of instruction for mounted skirmishers gives in great detail the movements for their deployment, advance, and retreat; change of direction and position; firing, extending and closing intervals, assembly, relief, &c.

If a platoon of 12 files is detailed for skirmishing duty, 6 files are deployed, and 6 are detailed as a reserve. The commandant of the platoon, one of the guides, a file-closer, and a trumpeter, accompany the skirmishers a little in rear of the line; the other guide commands the reserve, which he holds at 100 yards from the line of skirmishers.

Fig. 48.—Skirmishers.



(Fig. 48.) When the line is halted, each rear-rank man places himself so that his horse's head shall be 1 pace to the rear and right of the tail of the horse of his front-rank man; the interval between the files depends upon circumstances.

To fire at a halt.—No. 1 of the front rank, in each set of threes, advances 20 paces at a walk, halts, turns his horse's left side obliquely towards the enemy, fires, and returns at a trot to the place vacated by his rear-rank man, who has in the mean time taken the front-rank man's original position. As soon as No. 1 has fired, the front-rank No. 2, in each set of threes, advances 20 paces, but does not fire until No. 1 has retaken his place in the line; when No. 3 has fired, in the same manner the rear-rank No. 1 fires, &c.

To fire advancing.—This is executed according to the same principles; the line continuing to move forward at its original gait, while the men who are to fire advance by doubling the gait.

To fire retreating.—The whole line halts, and faces the enemy; Nos. 1 of the front rank fire, come to a right about, and retire at a walk, loading their pieces; as they pass their rear-rank men, the latter make a right

about, and follow at 1 pace to the right rear of their front-rank men; when they have retired 30 paces, each makes a right about, and halts, facing the enemy, the rear-rank men now nearest the enemy.

As soon as Nos. 1 have executed this, Nos. 2 do the same; then Nos. 3; then the rear-rank Nos. 1 fire, and so the movement is continued.

Fig. 49 gives an example of the arrangement of 2 squadrons detailed as skirmishers in front of a regiment of 6 squadrons; in each of the 2 squadrons a half squadron is held in reserve, the other platoons being deployed as already explained; each of these platoons holds one-half of its force in reserve.

The chain of skirmishers should always be continuous, unless there is artillery in rear of it; it should overlap the body it covers about 20 paces on each flank, and have its own flanks somewhat thrown back.

When it becomes necessary to dismount parties of cavalry for the purpose of holding or carrying some post, Nos. 2 of each rank remain mounted, and hold the horses of Nos. 1 and 3.

Lancers are not dismounted if it can be avoided; but if it is necessary, then only one-half the men dismount, and place their lances in the left stirrup boots of the men remaining mounted, who pass the sling over the left arm.

In actual service, the officers and non-commissioned officers must watch, that, when the signal to commence firing is given, only those men fire who see the enemy within suitable range. To prevent accidents, the men should never cock their pieces until their turn to fire arrives. Officers and sergeants with the chain and reserves *carry* sabres. Whilst dispersing, the sergeants and men charge sabres, or lances; but at the command *halt*, both ranks rest lances, or drop sabres, (allowing them to hang from the wrist by the sabre-knot,) and advance carbine or raise pistol.

THE COLUMN OF ATTACK.

Before passing to the school of the regiment, it is necessary to explain the column of attack. It must first be stated that in the Russian cavalry 2 squadrons form a division, commanded by a field officer; each division in a cavalry regiment partially corresponding to a battalion in an infantry regiment in a tactical sense; in line, the interval between the 2 squadrons of a division is the front of a platoon. The column of attack (so called) is, in fact, a column of manœuvre, and is nothing more than a division formed in double column on the centre by half squadrons at platoon distance, thus: the 4th platoon of the 1st squadron and the 1st platoon of the 2d squadron (having closed in on each other) form the head of the column; the next subdivision is composed of the 3d platoon of 1st squadron and the 2d of the 2d squadron, &c.

Fig. 50 shows the manner of forming column of attack from a halt.

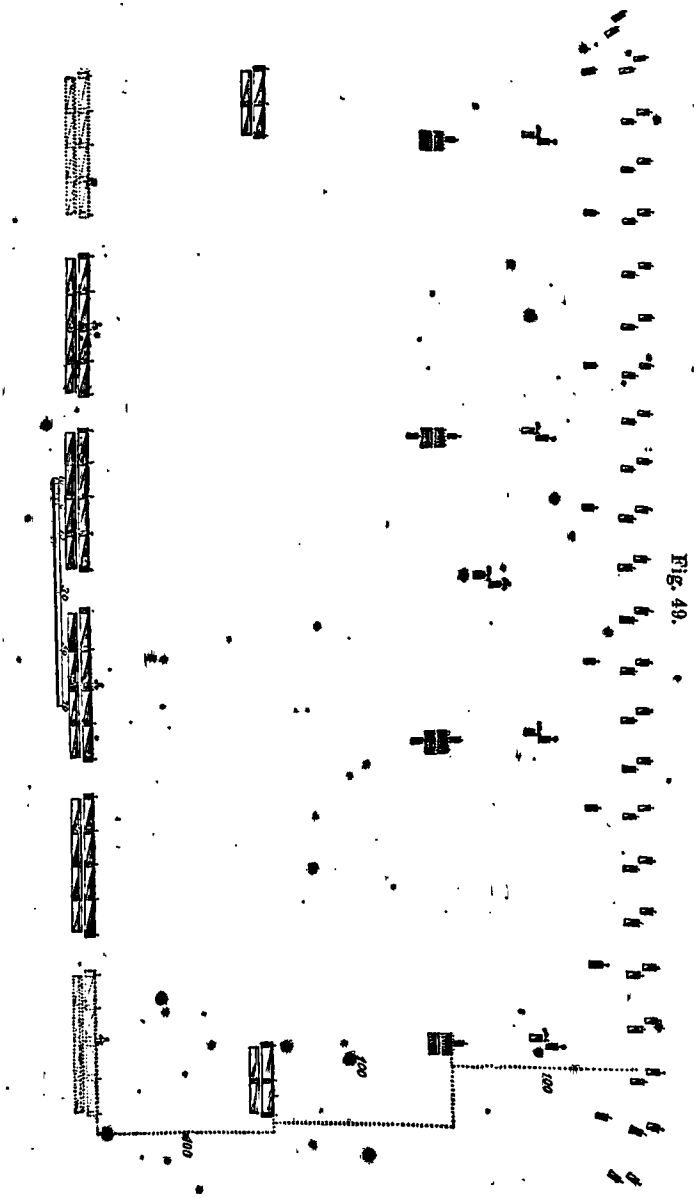


Fig. 49.

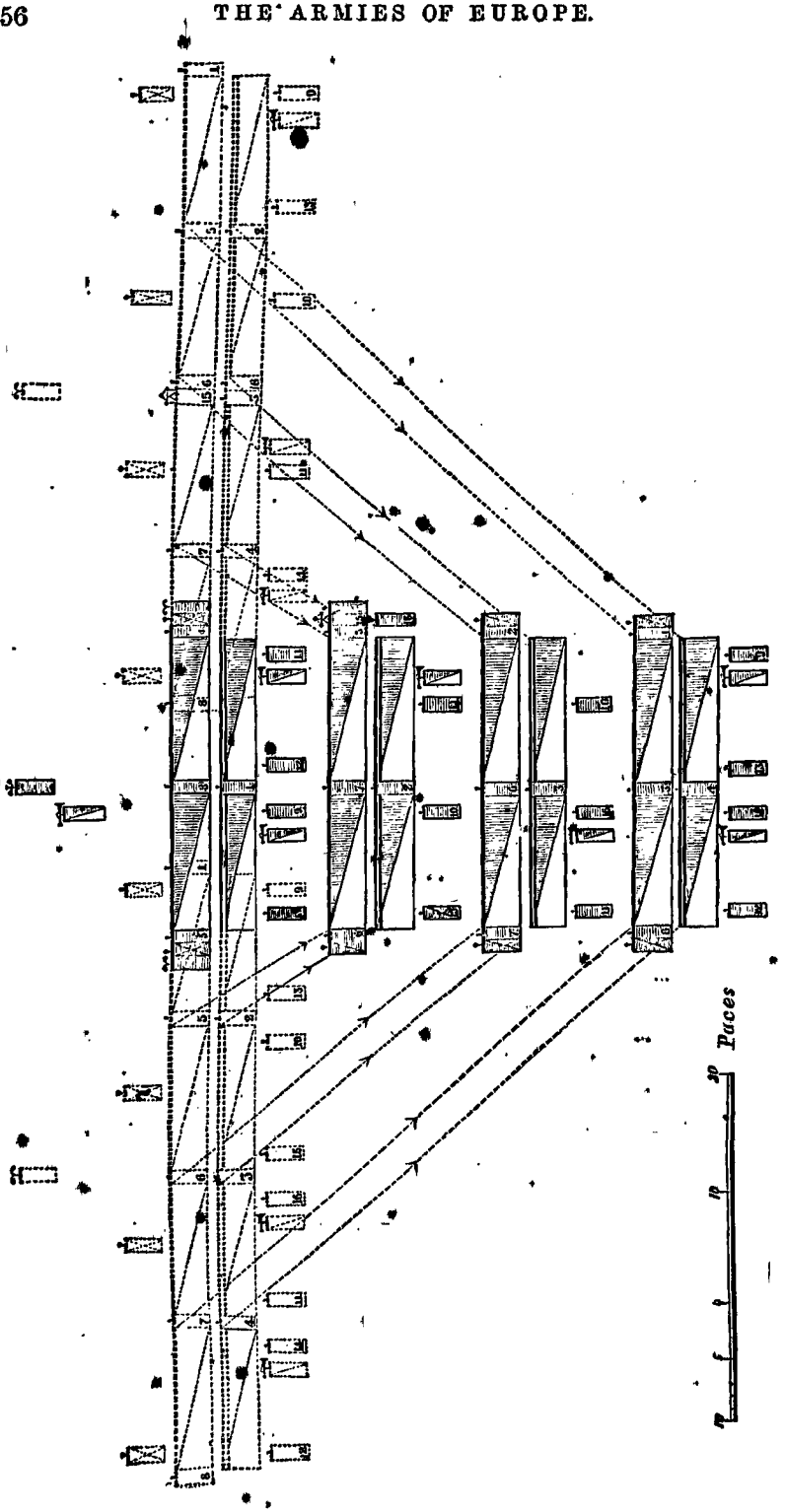


Fig. 50. Formation of the column of attack, from a halt.

Fig. 51.

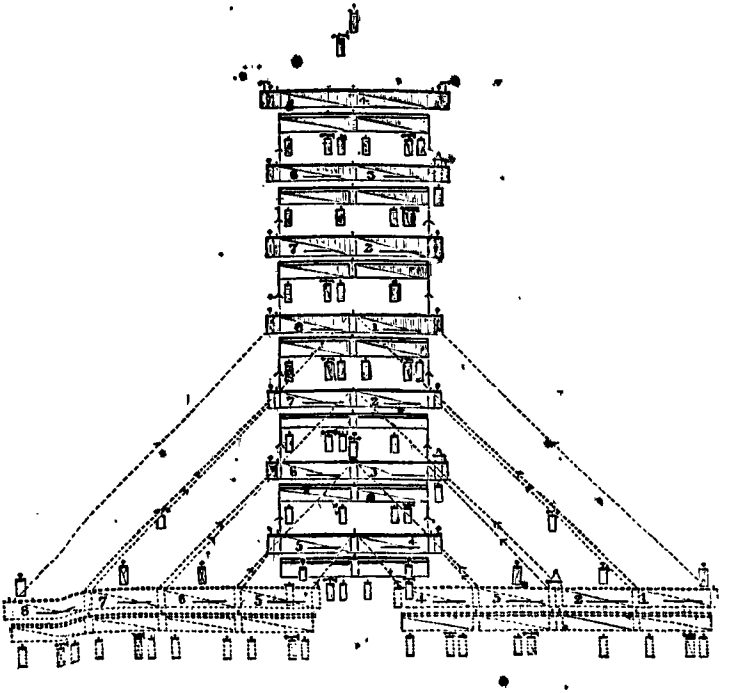
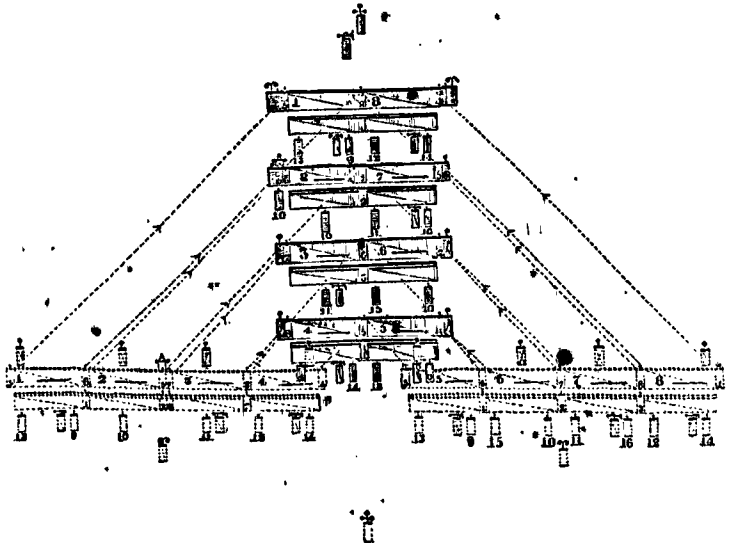


Fig. 52.



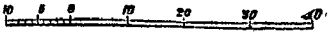


Fig. 51 shows the manner of forming column of attack advancing.

Fig. 52 shows the manner of forming column of attack retreating, the division having wheeled about, by platoons, before commencing its retreat.

To deploy the column, the platoons of the 1st squadron oblique to the right, those of the 2d squadron to the left; in deploying from a halt, the leading platoons gain platoon distance to the front and half platoon distance to the right and left, respectively.

SCHOOL OF THE REGIMENT.

Before commencing the drill of the regiment, the colonel is required to exercise the officers without the men; for this purpose the commandants of platoons are placed in one rank, at their proper intervals, (as if in front of their platoons,) the commanders of squadrons and divisions, also, in their proper places; and in this position they are carried through the various manœuvres, and taught to preserve their intervals and alignment; any absent commandants of platoons are replaced by sergeants.

Regiments of cavalry consist of 6, 8, or 10 active squadrons.

In each regiment, the squadrons are numbered in regular series, from right to left.

In regiments of 8 squadrons, the 7th and 8th are called flanker squadrons, and, when necessary, act as skirmishers; in regiments of 10 squadrons, (dragoons,) the 9th and 10th squadrons are armed with lances, are called lancer squadrons, and act as skirmishers.

In each regiment, the 1st and 2d squadrons form the 1st division.

the 3d and 4th	"	"	2d	"
the 5th and 6th	"	"	3d	"
the 7th and 8th	"	"	4th	"
the 9th and 10th	"	"	5th	"

It may be well here to repeat, and call attention to the fact, that all the regiments of light cavalry of the line, and 4 of the heavy cavalry, are 8-squadron regiments, so that the formations, &c., hereafter given for 8-squadron regiments may be regarded as the *rule* in the Russian service.

THE FORMATIONS OF A REGIMENT IN LINE.

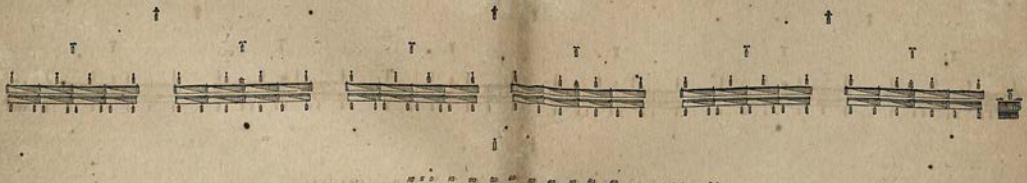
A cavalry regiment may be deployed for *inspection and review*, or for *combat*. In 6-squadron regiments, these formations are the same; in the others they are different. The formation for inspection and review is called the *order of review;* that for combat, is called the *order of battle.*

THE ORDER OF REVIEW.

This is the same for all regiments; in it all the squadrons are formed in one line, arranged in the order of their numbers, from right to left; the interval between the squadrons is equal to the front of a platoon.

Fig. 53 shows this formation, and the positions of the different officers.

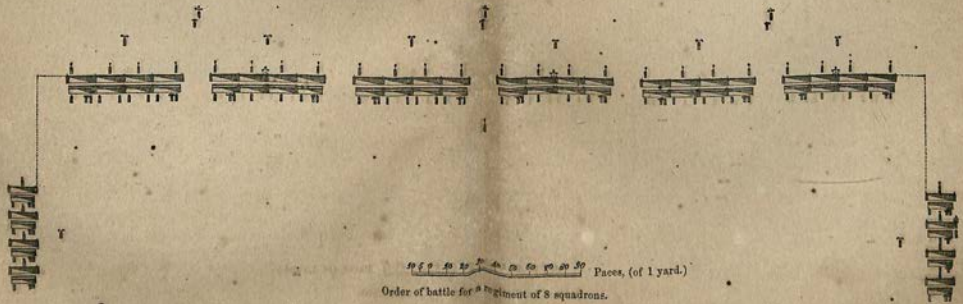
Fig. 53.



Paces, (of 1 yard.)

Order of review and of battle for a regiment of six squadrons.

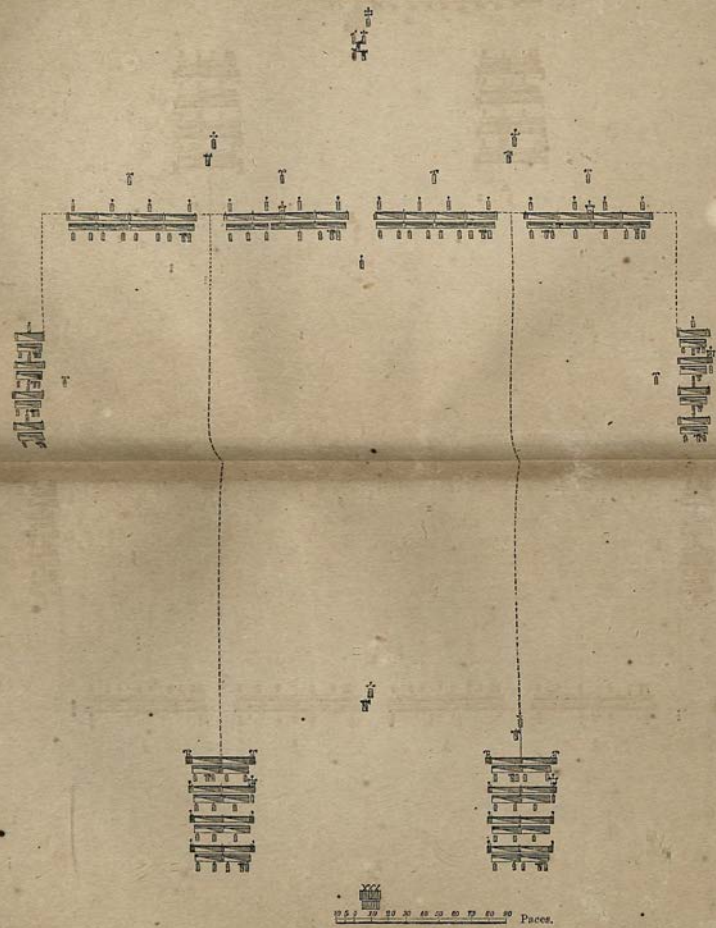
Fig. 54.



Paces, (of 1 yard.)

Order of battle for a regiment of 8 squadrons.

Fig. 55.



Order of battle of a regiment of 10 squadrons.

The colonel is 6 times platoon distance in front of the centre; each division commander at double platoon distance in front of the centre of his division; the squadron officers as prescribed in the school of the squadron.

If there is not an officer, as file-closer, behind each squadron or division, there must, at least, be one for the regiment, who is posted at platoon distance in rear of the centre of the line of non-commissioned file-closers; if there are more than one officer, as file-closers, but not as many as the number of divisions, they are posted in preference behind the flank divisions.

The trumpeters are either united, at half platoon distance on the right of the 1st squadron, or are with their respective squadrons.

THE ORDER OF BATTLE.

The formation of a regiment in order of battle depends upon the number of squadrons of which it is composed.

(Fig. 53.) For a regiment of 6 squadrons, it is, as already stated, the same as the order of review.

(Fig. 54.) For a regiment of 8 squadrons, it is as follows: the first 6 squadrons are deployed as in the order of review, and form the line of battle; the 7th squadron is formed in column by plateons, left in front, at squadron distance behind the right flank of the line of battle, its line of left guides being at platoon distance to the right of the right flank of the 1st squadron; the 8th squadron is formed in column by platoons, right in front, in a similar position behind the left flank of the line of battle.

(Fig. 55.) For regiments of 10 squadrons, (dragoons,) with all their squadrons present, the order of battle is as follows: in two lines; one line of the first four squadrons, the other line of the next four, either line may be in front; the front line is called the line of battle, and is deployed; the rear line is formed in columns of attack, these columns being opposite the intervals *in* the divisions of the line of battle.

The lancer squadrons (9th and 10th) are formed in columns by platoons in rear of the flanks of the line of battle, as described for the 7th and 8th squadrons of 8-squadron regiments.

The line of battle and the second line are 300 yards apart.

The figures explain sufficiently the positions of the officers in the order of battle.

Commands are given and repeated on the same principles as in the United States tactics; when the colonel gives the command, *march*, he raises his sabre vertically, to the full length of his arm; he does the same thing upon giving the command, *halt*.

In the order of battle, the chief trumpeter accompanies the colonel; there is one trumpeter with each commander of division; one with each platoon of the flanker, or lancer, squadrons; the rest are in the rank of file-closers with their respective squadrons.

In dragoon regiments, the drummers are united in rear of the second line.

STANDARDS AND THEIR ESCORT.

Every division has a standard, which is posted with the 1st squadron of the division, and generally follows the movements of the 3d platoon.

The escort of the standards is always composed of one of the platoons of the 1st squadron of the regiment; to bring the standards to the regiment, the chief trumpeter and 3 trumpeters accompany the escort; to carry them back to the colonel's quarters, all the trumpeters of the regiment are detailed.

Fig. 56. Fig. 56 shows the order of march of the standards and their escort.

In bringing the standards to the regiment, when the escort reaches the nearest flank of the regiment, it at once moves to its post in line, at a trot, by the rear of the regiment.

For the departure of the standards, the chiefs of the 3d platoons of the standard-squadrons conduct them to the front of the 1st platoon of the 1st squadron of the regiment, which in this case forms the escort; having turned over the standards to the adjutant, the chiefs of the 3d platoons at once return to their platoons.

It is required that the commandants of the 3d platoons of standard-squadrons shall be officers, even if all the other platoons of the squadron are commanded by sergeants.

ALIGNMENTS.

There are no general guides. One squadron is designated as the *squadron of direction;* its principal guides (see school of the squadron) are posted by the adjutant, who then aligns the principal guides of the other squadrons, in succession, on them.

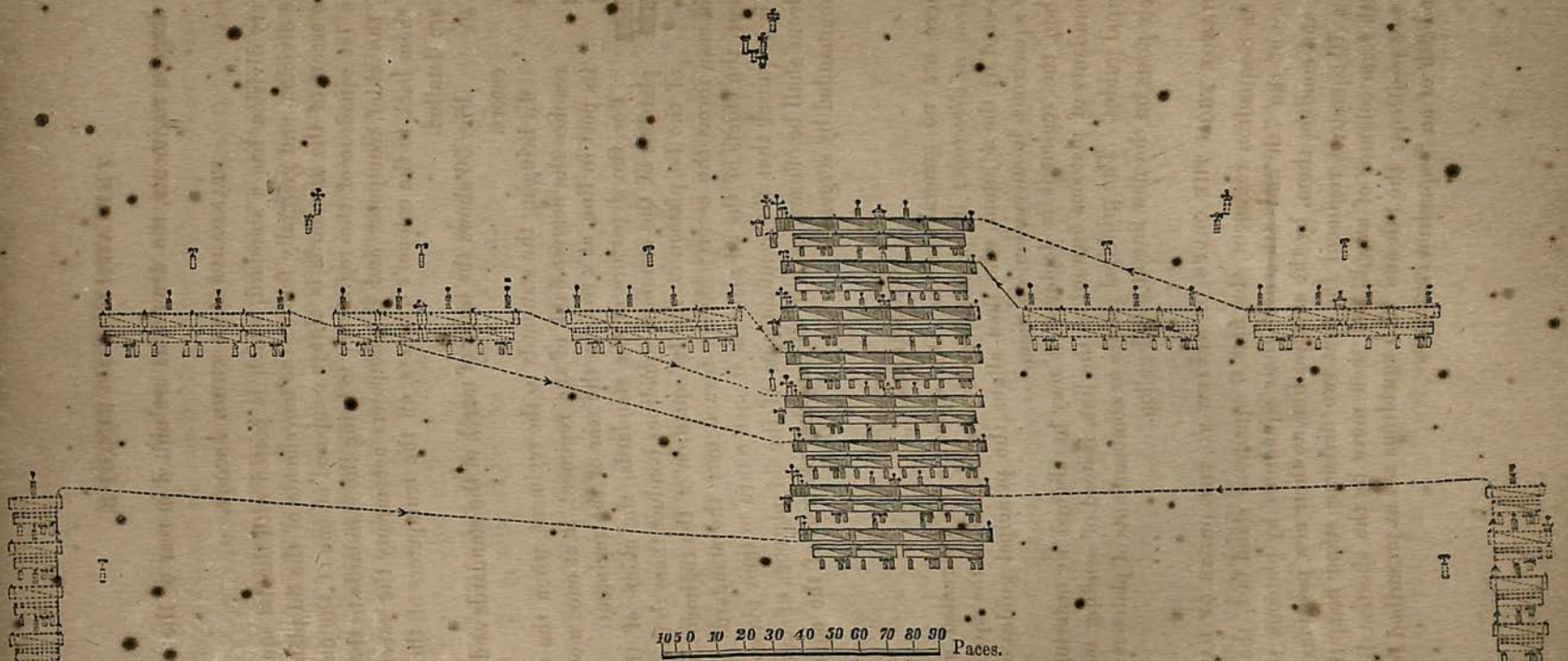
When the regiment is deployed, it may be aligned by ordering the commandants of platoons forward on the line, instead of sending out the principal guides. The principal guides or commandants of platoons move to their posts on the new line at a full gallop.

TO CHANGE FROM THE ORDER OF REVIEW TO THE ORDER OF BATTLE.

In an 8-squadron regiment, the first 6 squadrons stand fast, the commanders of the 7th and 8th wheel their squadrons by platoons to the right, and conduct them, by the shortest line, to their new positions.

In a 10-squadron regiment the first two divisions stand fast; the 3d and 4th form columns of attack, and then move by the shortest line to their new positions; the 9th and 10th squadrons act as prescribed for the 7th and 8th of an 8-squadron regiment.

Fig. 57.



Close column by squadrons.

In columns with distance, the colonel and the commanders of divisions and squadrons are all on the directing flank, opposite the centres of their respective commands, and at distances from the line of guides equal to their respective distances in front of the line when it is deployed; so that if the column wheels into line they are all in their proper places; the adjutant habitually follows the colonel.

Among other formations in column, the regiment is sometimes formed into several parallel columns of divisions, or squadrons, by platoons.

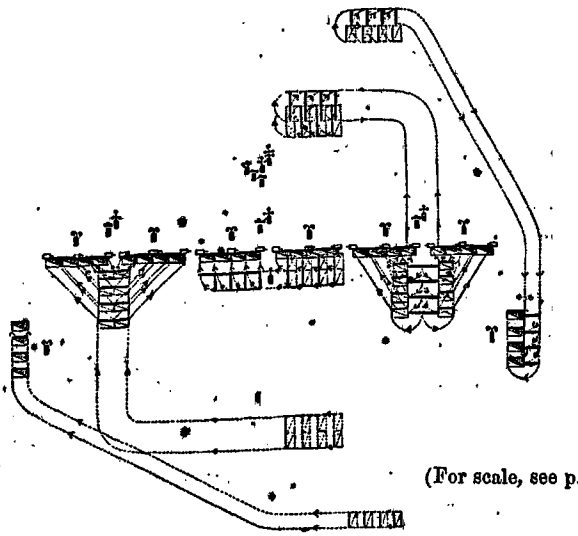
CLOSE COLUMNS.

In these, the distance between subdivisions is 15 paces, measured from the fore-feet of the front-rank horses of one subdivision to the same of the next subdivision.

Fig. 57 shows the manner of forming close column by squadron, from a halt, and the posts of the officers. If there are in front of any of the platoons officers other than their commandants, they retain their usual places.

If the close column is by half squadron, the commandants of divisions and squadrons are posted on the directing flanks of their leading subdivisions, and the commandants of half squadrons on the directing flanks of their respective commands.

Fig. 58.



(For scale, see p. 167.)

In forming close column from a halt, the movement is by threes, in each rank. In regiments of 10 squadrons, to form close column from order of battle, the divisions of the 2d line first deploy.

Fig. 58 will show the general manner in which a regiment formed in columns of attack changes front and deploys.

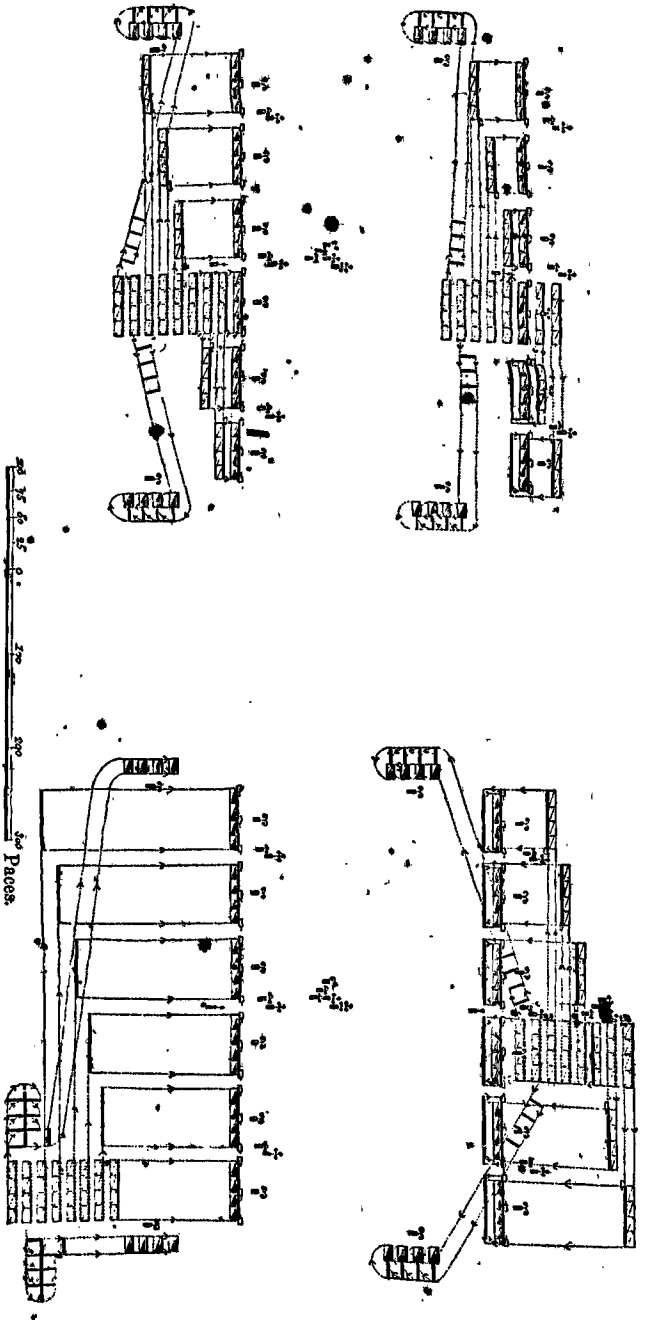


Fig. 59.

Fig. 59 will sufficiently explain the general methods of deploying close columns.

The changes of front are executed either with the squadrons deployed, or formed in columns of attack.

The regiment is exercised in advancing and retreating by alternate half squadrons, squadrons, or divisions.

The formations in echelon are by half squadrons, squadrons, or divisions.

THE CHARGE.

The charge in line, in close order, is executed according to the principles laid down in the school of the squadron.

In certain cases, regiments charge in close column; this is executed, in preference, by the cuirassiers, and always at the *trot out;* only the front rank of the leading subdivision charge lances, or sabres.

The charge in open order is also executed according to the principles laid down in the school of the squadron; one half squadron of every squadron charges, while the others remain in reserve. One division commander is detailed to command the half squadrons which charge, another to direct the reserve. If the regiment is formed in columns of attack, when the charge in open order is to be made, the squadrons first form columns by half squadron, of which the leading half squadrons charge, while those in rear are held in reserve, and at once take the proper intervals of 5 platoon fronts.

The flanker squadrons of 8-squadron regiments, and the lancer squadrons and second line of dragoons, follow the movements of the line of battle; marching at the same gait as the latter until it charges; when they move on at the trot out; closing up on the line of battle to the prescribed distance, when it halts. If the colonel considers it necessary to form the flanker or lancer squadrons in echelon, he orders them to *form squadron*, after which they continue the movement as just explained.

If the signal *reserve* is sounded, these flanker or lancer squadrons, instead of halting, move on at a charge in pursuit of the beaten enemy, returning to their posts in rear of the flanks when the recall is sounded.

REVIEWS.

Cavalry passes in review: in *column with distance*, by platoons, half squadrons, or squadrons; in *column with half distance*, by half squadrons, squadrons, or divisions; in *close column*, by half squadrons, or squadrons. The adjutant is at the head of the column; one pace behind the adjutant is the band of trumpeters, in two ranks, with the chief trumpeter on the right of the front rank; the colonel, 6 paces in rear of the trumpeters; the commander of the 1st division, 3 paces in rear of the colonel; the

commander of the leading squadron, 3 paces in rear of the division commander; then the leading subdivision of the column.

The Russians call a division of 2 brigades divisia; a division of 2 squadrons is division. Confusion is thus avoided.

EVOLUTIONS OF THE LINE.

The volume on this subject is divided into two parts: 1. Evolutions of the line proper; 2. Orders of battle, general columns, and the application of the evolutions of the line to these.

EVOLUTIONS OF THE LINE PROPER.

This subject comprehends the movements of several regiments, whether in line or in columns.

The first great requisites for a successful cavalry general and instructor are, perfect coolness and presence of mind.

The rules for *giving* and *repeating commands*, as given in the school of the regiment, apply here, with a few additions.

The preparatory commands are given by the general commanding, and are repeated by the other generals and the colonels; they are at once followed by the designation of the gait and the command, *march*. Down to the brigadier-generals, inclusive, the general commands alone are given; the colonels give the special commands prescribed in the school of the regiment.

In all cases the generals of brigade repeat the preparatory commands of the generals of their divisions.

If all the regiments of a brigade are to execute the same movement, the general of brigade gives the preparatory commands for all of them.

If different regiments of a brigade are to execute different movements, the general of brigade gives the preparatory command for the movement of the 1st regiment only; the colonels of the other regiments giving the requisite commands.

Whenever the preparatory commands are to be repeated by all the generals and colonels, the general commanding raises his sabre; this signal is repeated simultaneously by all the generals and colonels; the commanders of divisions (2 squadrons) and squadrons at once give the command, *march*.

When a movement is to be executed by all the troops, the general preparatory commands are repeated by all the subordinate commanders; but when only a portion of the troops are to execute the movement, the preparatory commands will be repeated only by the commanders of that portion.

Colonels will always preface the command, *regiment*, by the number of their regiments in the division, or brigade, (if there is only a brigade present.)

Generals of division will likewise preface the command, *division*, by the number of their respective divisions; but generals of brigade simply give the command, *brigade*, not prefacing any number.

If the troops are formed in one general column, or in a line of regimental columns, the commands to *draw* and *return sabres* are given by the generals of division, and repeated by the generals of brigade and the colonels; the troops execute the order at the command of the latter. If the regiments are deployed, or each formed into several columns in line, these commands are repeated by all commanders, down to those of squadrons inclusive, and executed at the command of the latter. When the number of troops is so great that the voice of the general commanding cannot be heard by all, he sends his orders by aides-de-camp. In such cases the distant parts should conform to the movements of those nearest the general commanding, that the movements may be as simultaneous as possible. The general will assure himself that the aides fully comprehend the order, so as to prevent errors and misunderstandings; the aides should carry the order with the utmost rapidity, and deliver it clearly and slowly, but they have no authority to interfere with the execution. If they see that the order is not properly carried out, they should remind the officer to whom it was delivered and return to the general as soon as it is executed; they report the fulfilment of the order, or the reason for its non-fulfilment. Trumpet signals apply only to the first line, and are repeated only by the trumpeters of that line. All commands to the second and other lines are given by the voice. The rules for the guidance of the principal guides, as given in the school of the regiment, apply to the case of evolutions of the line.

POSTS OF GENERALS, ETC.

Figs. 60 to 65 give the positions of the generals of division, brigade, &c. When the regiments are deployed, either in the order of review or of battle, the generals of division are at the distance of ten platoon fronts in advance of the centres of their respective divisions; the generals of brigade eight platoon fronts in advance of the centres of their brigades.

In general close column (fig. 63) the general of division is on the directing flank of the leading subdivision of his command, at the distance of three platoon fronts from the guide; each general of brigade on the line of his leading subdivision, at the distance of two platoon fronts from the guide. When the regiments are formed in line of close columns of regiments, at deploying intervals, the posts of the generals are as when the regiments are deployed. When the line of close column of regiments is with closed intervals, the generals of division are at the distance of six platoons; generals of brigade, four; colonels, two in advance; the latter are on the prolongation of the lines of guides of their regiments. The general

Fig. 60.—Division deployed in the order of review.

Fig. 61.—Division in line of columns, with full intervals.

Fig. 63.
Division in general close column.

Fig. 62.—Line of column, with closed intervals.

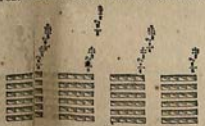


Fig. 64.—Brigade of 8-squadron regiments in order of battle.

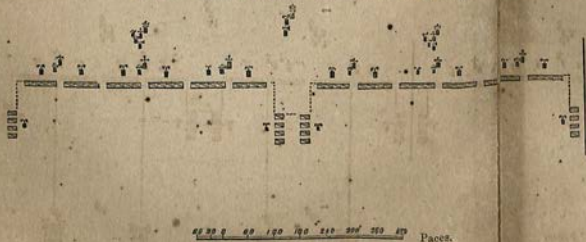
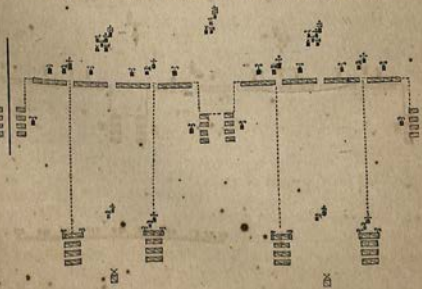


Fig. 65.—Brigade of 10-squadron regiments in order of battle.



commanding may move wherever his presence is most necessary; but the subordinate commanders will in no case leave the places assigned to them, but will correct any faults, either by orders to the nearest subordinate commanders, or by means of their aides-de-camp. Each general has a trumpeter with him; the other trumpeters take post as prescribed in the school of the regiment.

OF DEPLOYED LINES.

Regiments and brigades are posted, in each division, from right to left, according to seniority. In the order of review and the order of battle they are each formed as prescribed in the school of the regiment. Corps, divisions, and brigades are habitually formed in order of battle, unless special orders are given to form them in the order of review.

Fig. 64 shows the formation of a brigade of eight-squadron regiments in the order of battle.

Fig. 65 shows the formation of a brigade of ten-squadron regiments in the order of battle.

Both in the order of battle and that of review the interval between regiments and brigades is two platoon fronts; in the first case, for eight and ten squadron regiments, this interval is measured between the flanker, or lancer, squadrons. In the order of battle of commands composed of ten-squadron regiments the front line may be composed of the corresponding wings of all the regiments, or one half of it may be composed of the right wings of one-half the regiments, and the other half of it of the left wings of the remaining regiments.

In the order of battle of eight and ten squadron regiments the flanker, or lancer, squadrons are regarded as belonging to the first line, and not as constituting a separate line. When the general line is to be aligned to the front, care must be taken that the new direction does not cross the old.

In all alignments the flanker, or lancer, squadrons, formed in columns by platoons, align themselves on the flank squadrons of the line of battle, and always have the guide on the inner flank.

The march to the front, the oblique march, wheels and abouts by subdivisions, and halts, are executed by the commands and according to the principles laid down in the school of the regiment, substituting in the preparatory commands, when necessary, the word *division*, or *brigade*, for *regiment*. The charge is executed according to the principles laid down in the school of the regiment.

The same holds good with regard to the passage of obstacles; but if partial obstacles exist along the front of a whole regiment, each squadron breaks into column by the appropriate subdivision, and forms squadron as soon as the obstacle is passed. If all the ground in front of a regiment is impassable, it forms into close column, by squadrons, in rear of one of the regiments on its flanks, and does not re-enter the line until the next

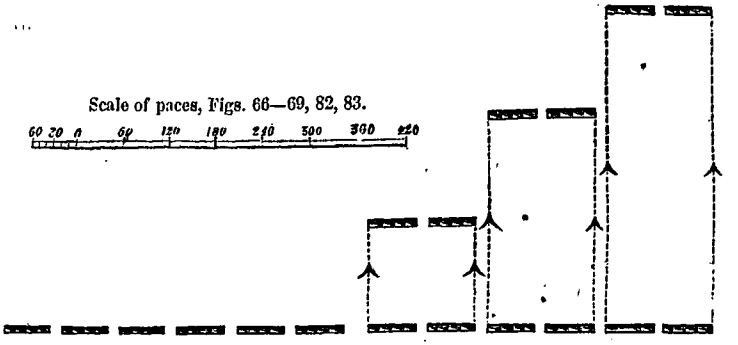
halt, unless orders to the contrary are given. If the obstacle is in front of the regiment of direction, another regiment is designated in its place.

ECHELONS.

The formation of and movements by echelons are executed as in the school of the regiment, with the following modifications:

(Fig. 66.) In a line of considerable extent, one part may break by

Fig. 66.



Echelons by divisions, one regiment standing fast.

echelons while the other part remains in line; in this case the movement begins at one of the flanks, and is arrested by the command, *halt.*

Echelons may be formed on an interior part of the line, in which case that part is designated as that of direction; the following movements may thus be executed: (1,) one flank of the line may break by echelons to the front, and the other to the rear; (2,) both flanks may break to the front, or both to the rear; (3,) the subdivision of direction may commence the movement, by breaking to the front or rear.

In the first two cases the subdivision of direction stands fast, in the last case it commences the movement; all these movements are executed as prescribed in the school of the regiment. During movements by echelons, the 2d line of ten-squadron regiments conforms to what will hereafter be laid down for the *second line.* Line is formed from echelons according to the principles of the school of the regiment.

THE ADVANCE AND RETREAT BY ALTERNATE HALF SQUADRONS, SQUADRONS, AND DIVISIONS.

This is executed as prescribed in the school of the regiment, with the following modifications: if the movement is ordered to be commenced by *the right,* and by divisions, (of two squadrons,) then, in six and eight squadron regiments, the 1st and 3d divisions of the 1st regiment, and 2d division of the 2d regiment of each brigade, commence the movement; if it is directed to be commenced by *the left,* the 2d division of the 1st regiment, and the 1st and 3d divisions of the 2d regiment, commence the

movement. If the order to advance by alternate subdivisions is given while the line is on the march, the subdivisions which are to commence the movement continue marching at the original gait, but the others halt; if, under the same circumstances, a retreat is to be executed, the subdivisions which are to commence the movement at once wheel about at the original gait, the others halt.

TO CHANGE FRONT.

In changes of front the general rule is: the regiment of direction changes front by the rules laid down in the school of the regiment; the others form columns of attack, which move by the shortest lines upon the positions marked by their principal guides.

If, in a single brigade, the preparatory command is prefaced by the words, "*by squadrons*," each regiment executes the movement according to the school of the regiment, neither forming columns of attack.

If the flank squadron of any brigade or division is the squadron of direction, the contiguous regiment of the next brigade or division may change front according to the school of the regiment. In a line of great extent, all the regiments may be first formed into columns of attack, and the change of front then executed.

OF THE FORMATION OF COLUMNS.

General rules.—Columns with full distance are formed according to the school of the regiment. Columns with less than full distance are formed like close columns. The principles of the formation of close columns by squadrons and by half squadrons being the same, the rules for those by squadrons are alone given.

Columns having the senior regiment in front are called *right columns*, those having the junior regiment in front are called *left columns*, whether each regiment be right or left in front; in all cases right general columns have the guide left, and the reverse.

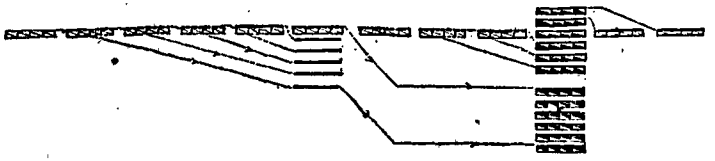
The distance between divisions, brigades, and regiments, in close column, is twice platoon distance, measured as between the subdivisions of a regimental close column. General close columns may be formed either from a deployed line or from a line of close regimental columns.

FORMATION OF GENERAL CLOSE COLUMNS FROM A DEPLOYED LINE.

(Figs. 67 and 68.) One squadron is designated as that of direction; the regiment to which that squadron belongs forms close column on it, according to the school of the regiment; the other regiments each form close column on the flank squadron nearest the regiment of direction, and then move by the oblique march to their respective positions in the general column.

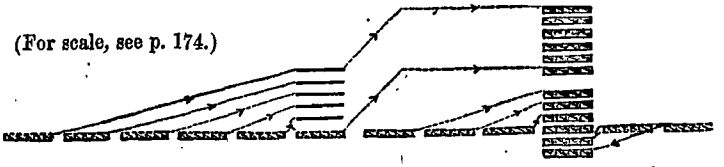
In all the movements of the regimental columns to form the general column, especially when obliquing, every squadron must be exactly

Fig. 67.



General right column on 3d squadron, 1st regiment.

Fig. 68.



(For scale, see p. 174.)

parallel to its original position in line; the lines of guides on both flanks must be parallel to each other, and perpendicular to the squadron at the head of the column; and, finally, the several files must be parallel to each other.

FORMATION OF GENERAL CLOSE COLUMNS FROM A LINE OF REGIMENTAL COLUMNS.

Regimental columns in line—*i.e.* columns having the heads of all the regiments on the same line—are formed with full or closed intervals; this formation is called a line of columns with full or closed intervals.

Full intervals are such as to permit all the regiments to deploy into order of battle on the same squadron of every regiment; closed intervals are: between 6-squadron regiments 2 platoon fronts; between 8-squadron regiments 4 platoon fronts; between 10-squadron regiments 6 platoon fronts.

General close column may be formed from a line of columns, either with full or closed intervals.

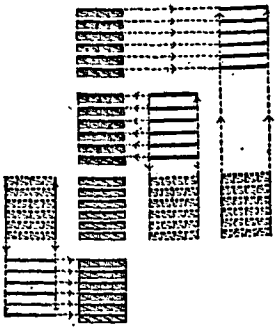
The first case has already been explained, when giving the manner of forming general column from a deployed line.

Fig. 69 gives an example of the latter case; one regiment being designated as that of direction, those which are to be in front of it in the column march straight to the front, until arriving abreast of their places in column, when they move straight to their places; those that are to be in rear of the directing regiment gain their positions by first marching to the rear.

If the order to form general column is given when the line is in march, the directing regiment halts; the others acting as just described.

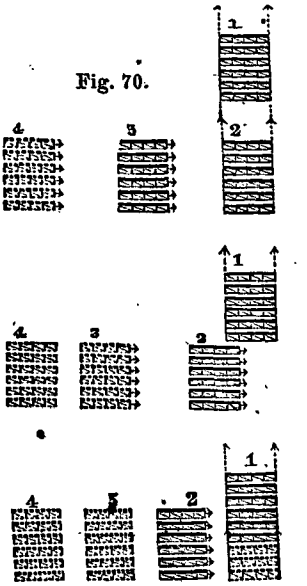
Fig. 70 shows the manner of forming the general column on one of the flanks when the march is to be continued after the formation.

Fig. 69.



Formation of a right general column, on 3d regiment, from a line of columns with closed intervals.

Fig. 70.



The 1st regiment marches straight forward; the 2d moves to the right, by threes in each rank, as soon as the last squadron of the 1st regiment is abreast of the 3d squadron of the 2d regiment, and moves to the left, by threes, when its line of left guides is on the prolongation of that of the 1st regiment; the 3d and 4th regiments move to the right, in turn, as soon as the regiments next on their right have gained an interval equal to the depth of a regimental close column—*i.e.* in a 6-squadron regiment 5 platoon fronts; in an 8-squadron regiment 7 platoon fronts; in a 10-squadron regiment 9 platoon fronts. At the close of the movement, the distances between the regiments in the general column will be four platoon fronts; the colonels of the 2d, 3d, and 4th regiments will, therefore, close up on the head of the column, by doubling the gait.

If the column is thus formed on the march, the 1st regiment continues to move at the original gait; the others halt.

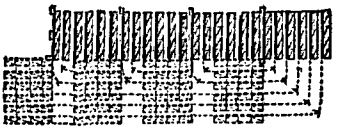
Each brigade may be formed into a separate column, and these brigade columns, afterwards, in one general column.

Fig. 71 shows the manner of forming general close column, from a line of regimental columns, by a change of direction to the right or left, executed by each regiment. If the intervals between the regiments in line are less than those already laid down, it will be necessary to increase them for eight or ten squadron regiments before executing the move-

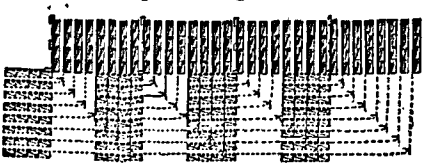
ment. At the close of this formation, the regiments in the general column will have less than their proper distances; these must be taken upon the first movement of the column.

Fig. 71.

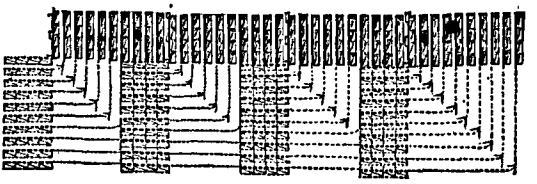
6-squadron regiments.



8-squadron regiments.



10-squadron regiments.



TO FORM LINE OF COLUMNS FROM A DEPLOYED LINE.

To effect this, each regiment forms close column by squadron.

If the same squadron in each regiment is taken as that of direction, the line of columns will be formed with full intervals.

If the line is to be formed with closed intervals, the squadrons of direction are so chosen, in the different regiments, that no squadron may be obliged to pass twice over the same ground.

A line of columns of attack is formed as prescribed in the school of the regiment.

OF MOVEMENTS IN COLUMN.

Movements in general column.—These are made in every direction, according to the principles of the school of the regiment.

In changing the direction of a close column, by the head of column, the following is to be observed: each regiment will turn where those in front of it did; the gait of the regiments in rear must be so regulated that no part of the column may be obliged to halt before the wheel is made, and that, on the completion of the wheel, every regiment may have its proper distance.

Fig. 72 gives an example of the method of changing the direction of a close column from a halt.

In close column, distances are taken in accordance with the principles of the school of the regiment; *e.g.*, in a close column, consisting of a brigade of 2 six-squadron regiments, to take distance, by head of column, on the 2d squadron of 2d regiment; the 2d regiment takes distance on its 2d squadron, as laid down in the school of the regiment; the colonel of the 1st regiment marches it forward, and when his 6th squadron is 6 times platoon distance in advance of the point where the 1st squadron of 2d regiment halted, he halts the 6th squadron; the others halting in succession as they gain their distances.

Fig. 72.

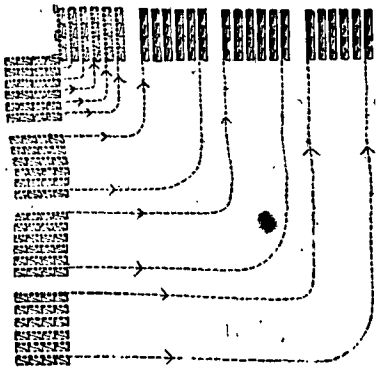
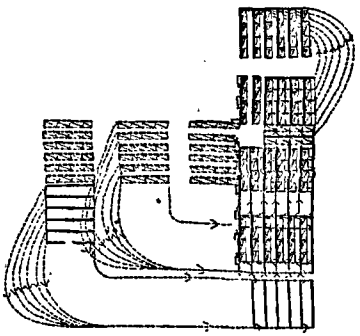


Fig. 73.



Columns with distance are closed according to the school of the regiment.

Movements of a line of columns.—These are effected according to the same principles, and by the same commands, as for a deployed line.

The intervals of a line of columns are diminished or extended by marching each column along the line; the principal guides of the leading squadron of each column precede it, and mark its new position.

Fig. 73 presents an example of the manner of changing the front of a line of columns with closed intervals.

TO FORM LINE FROM COLUMN.

General rules.—To form line from a right general column, with full distance, each subdivision wheels to the left; from a left column, they wheel to the right; in both cases the line is formed on the side of the guides, and in accordance with the principles of the school of the regiment.

To form line forward from a similar column, it is first closed, and the line then formed as usual from closed columns.

A general close column may be formed either into *line of columns*, or into a *deployed line.*

The formation into *line of columns* may be effected either to the front, to the right, or to the left. That to the front is effected by conducting the heads of the regiments on the new line; that to the left, (Fig. 76,)

Fig. 75.

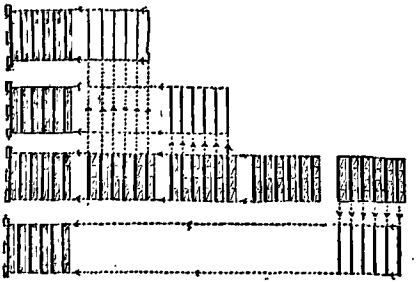


Fig. 76.

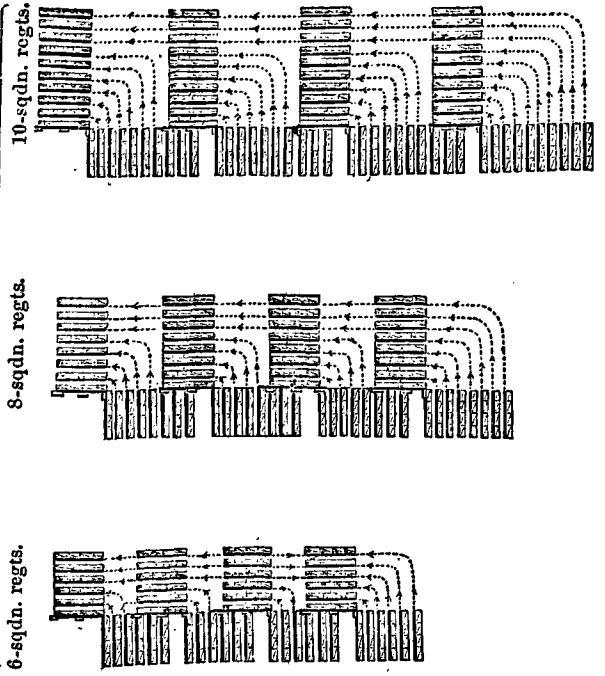


Fig. 77.

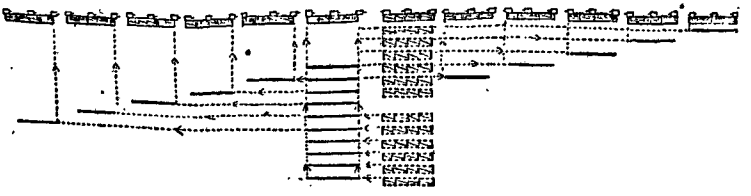
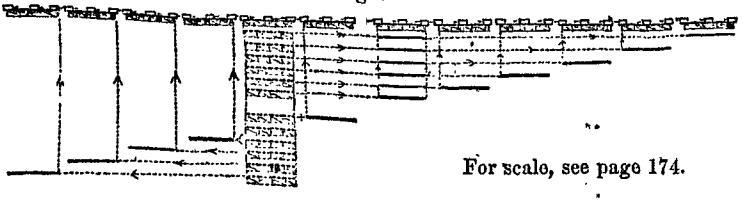


Fig. 78.



For scale, see page 174.

from a right column, by a change of direction to the left in each regiment; that to the right, from a left column, by a change of direction to the right in each regiment.

To form a general *close column* into a *deployed line*, to either flank, the column first changes direction, and then forms line to the front. A line of close columns may also be deployed into line to the front, or either flank; in the last case, the preceding paragraph must be conformed to.

In *forming line of columns* from general close column, the regiment of direction may either halt or move forward. In both cases the formation is executed according to the rules given, in the school of the regiment, for deploying a close column: *i.e.* all the movements and rules laid down for the squadrons and squadron commanders are here executed by the regimental columns and the colonels.

The line on which the heads of columns form is marked by the principal guides of the leading squadron of each regiment.

The line of columns, formed from general column, should be with closed intervals.

Fig. 74 shows the manner of forming line of columns to the front, on the 3d regiment, which stands fast.

Fig. 74.

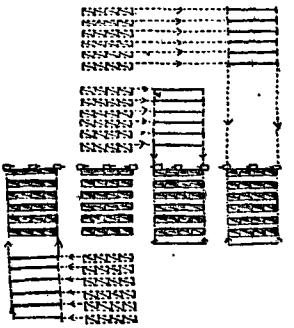


Fig. 75 shows the manner of forming line of columns to the front, on the 3d regiment, which advances.

Fig. 76 shows the manner of forming line of columns to the left, from general column.

To form a *deployed line* from general close column, one squadron is designated as that of direction. In forming line on the leading squadron, it may either stand fast or advance; if any other squadron is that of direction, it will always be thrown forward. The column may be deployed either from a halt or on the march; in the latter case, the squadron of direction halts at the command of execution.

Fig. 77 gives an example of the manner of deploying a general column of 2 regiments on the 6th squadron of the 1st regiment.

Fig. 78 gives an example of the deployment of the same column on the 2d squadron of the 2d regiment.

TO DEPLOY INTO LINE FROM A LINE OF COLUMNS.

Fig. 79.

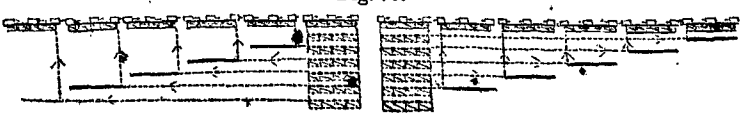


Fig. 79 gives an example of the deployment of a line of 2 regimental

columns; this will explain the general principle of all such deployments, in which the squadrons of direction always advance upon the new line.

A *line of columns* of *attack* is deployed as prescribed in the school of the regiment.

OF THE FORMATION IN TWO LINES.

The first line is usually deployed; the second in columns of attack; the first line, however, is sometimes also in columns of attack.

The distance between the lines is, usually, about 300 yards.

The second line is formed in columns of attack, because these columns are deployed more rapidly than any other; because in this order the second line can advance through the first without obstacle, and the first can in like manner retreat through the second.

The columns of attack of the second line are placed behind the corresponding divisions (of 2 squadrons) of the first line; the centres of the columns opposite the middles of the intervals *in* the divisions of the first line.

A general column is deployed *into two lines*, as follows: the portions designated for the 1st line remain in the column until ordered to deploy, either from a halt or in march, by the general commanding, whose order is repeated by the commander of the 1st line; the portions designated for the 2d line are conducted to the proper distance to the rear by the commander of that line, and, having gained this distance, at once deploy, and form columns of attack; if the deployment is made on the march, the 2d line reduces the gait, halting if the original gait was a walk, and then acts as described above; in any case, when the 2d line has formed its columns of attack, it preserves its proper distance from the 1st line by doubling or reducing the gait as may be necessary.

ASSIGNMENT AND POSITION OF COMMANDERS.

Each line should have a special commander. In a division formed in two lines by brigade, the commanders of the lines are the generals of the brigades of which they are respectively formed; if a brigade is formed in two lines, the colonels of the regiments are the commanders of the lines; if each line is composed of two regiments belonging to different brigades, then the general of division assigns a general of brigade to command each line. In every case the position of the commander of each line is in conformity with what has heretofore been prescribed; *e.g.* if a line consists of two regiments, whether of the same brigade or not, the commander of that line posts himself as prescribed for a general of brigade.

The general of division is always with the 1st line.

MOVEMENTS OF THE LINES.

All movements of the 1st line are made by signals, or by the order of the general commanding, repeated by the commander of the 1st line; the movements of the 2d line are made by orders of the general commanding, transmitted by an aide-de-camp, and upon the immediate order of the commander of the 2d line. Trumpet signals refer only to the 1st line, and are not repeated by the trumpeters of the 2d line. The 2d line conforms to all the general movements of the 1st, and preserves, with reference to it, the distance at which it was originally formed. If the 1st line charges, the 2d moves at the trot out, and resumes its proper distance when the 1st halts, or passes to a slower gait from the charge.

If the 1st line moves to either flank, advances, or retreats, the 2d line, formed in columns of attack, executes the corresponding movements by platoons. If the 1st line advances or retreats by alternate subdivisions, the 2d line, in conforming to the movement, moves in one mass; *e.g.*, if the 1st line advances by alternate squadrons, the odd squadrons commencing the movement, the whole of the 2d line advances when the even squadrons of the 1st line start, and halts when these squadrons arrive abreast of the halted odd squadrons, and again advances when the odd squadrons start the second time,—for the distance between the lines is measured between the nearest parts of the two; if the 1st line retreats by alternate squadrons, commencing with the odd squadrons, the 2d line stands fast until the even squadrons start, and moves with them.

If the 1st line advances or retreats by echelons of divisions, the columns of attack of the 2d line move at the same time as their corresponding divisions of the 1st line; if but a part of the 1st line breaks by echelons, the other part remaining in line, the 2d line conforms to the movement.

If the 1st line breaks by echelons on both flanks, or by the centre, the 2d line moves in line, with the rear echelons. If the 1st line breaks by echelons of squadrons, the divisions of the 2d line conform to the movements of that squadron of their corresponding division of the 1st line which is nearest them, and farthest from the enemy.

CHANGES OF FRONT.

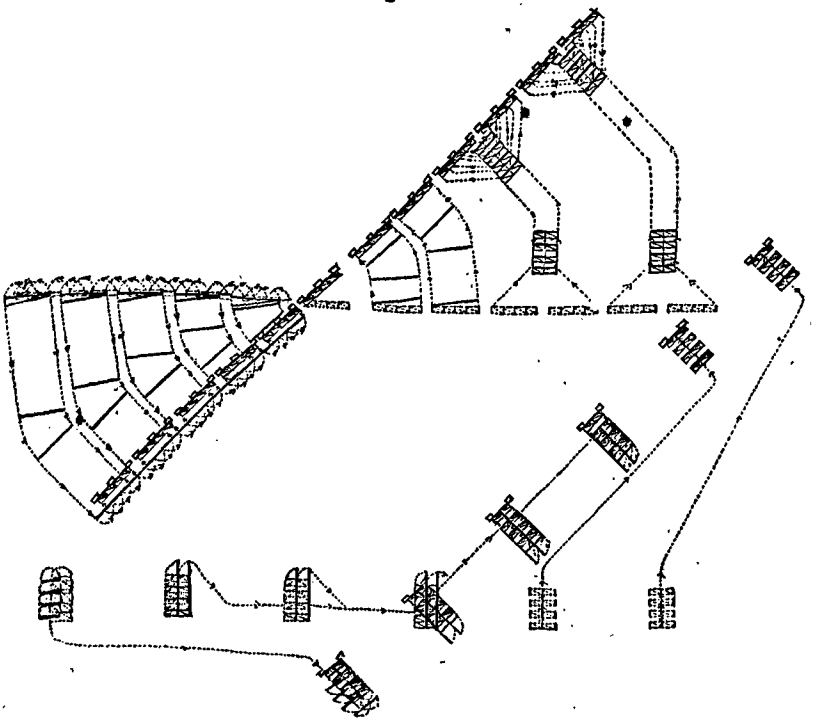
The 1st line changes front as heretofore explained.

When the front is changed 45°, the division of direction in the 2d line is the one corresponding to that of the 1st line. The directing division of the 2d line, and all the others in rear of that flank of the 1st line which forms forward, also form forward; the division next to that of direction, on the side in rear of that flank of the 1st line which forms to

the rear, will have its new position on the line of original formation of the 2d line, and at the point originally occupied by the next division on the other side of that of direction; all the remaining divisions form to the rear.

Fig. 80 shows the manner of changing front forward 45°, on the first

Fig. 80.



Change of front 45°, on the 1st division 2d regiment.

division of the second regiment of the 1st line, and explains what has just been said: *i.e.* the first division of the second regiment of the 2d line is that of direction: it and all the divisions of the 1st regiment form forward, the second division of the second regiment occupies the original position of the third division of the first regiment, and the third division of the second regiment forms to the rear.

Fig. 81 shows the manner of changing front 90°. This example will explain the general rule for changing front 90°, which is as follows: in the second line, the division of direction is the one corresponding to that of the 1st line: it, and all the others behind that flank of the 1st line which forms forward, form forward; the two next divisions in rear of the other flank of the 1st line also form forward; the remaining divisions of the 2d line form to the rear.

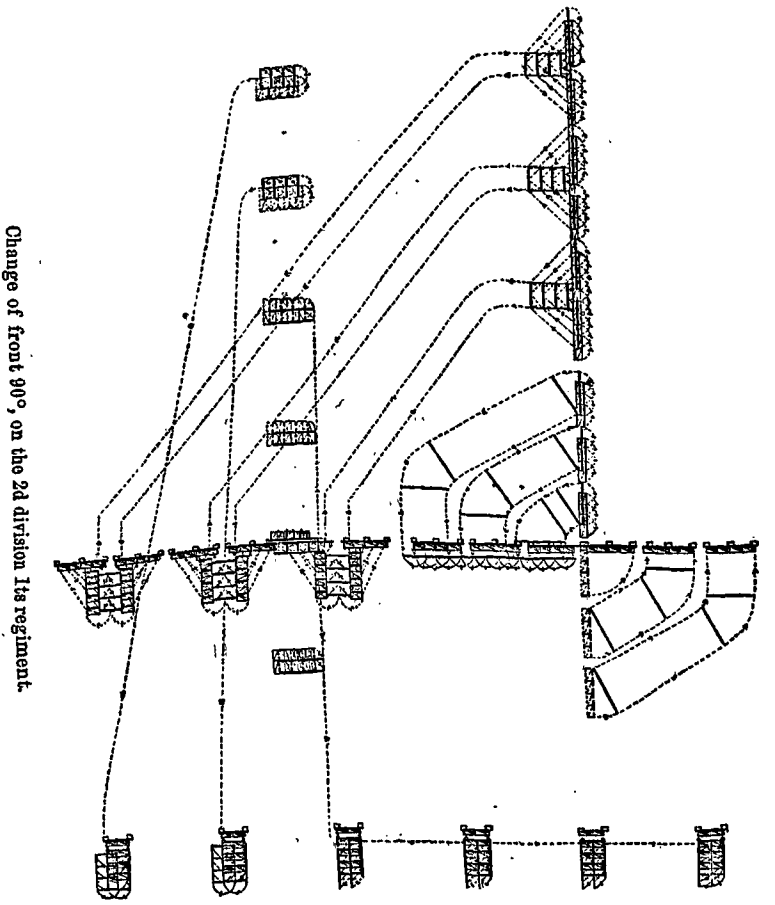


Fig. 81.

PASSAGE OF THE LINE.

This may be executed in three ways; (*a*) by the 2d line advancing through the 1st; (*b*) by the 1st line retreating through the 2d; (*c*) by the simultaneous movement of both lines in opposite directions, *i.e.* the 1st line retreating, the 2d advancing.

When the general commanding intends the 2d line to advance through the 1st, he sends orders to the commander of the 2d line to advance; if he intends the 1st line to retreat through the 2d, he informs the commander of the latter of his intention, and orders the 1st line to retreat.

In the passage of the line, both may be formed in columns of attack, or one in this order and the other deployed.

It is a general rule that any party of troops meeting, or passing, another party, leaves the latter on its left; therefore, if the 2d line, formed in columns of attack, is ordered to pass through the 1st line, formed in like

manner, the columns of the 2d line pass to the right of the corresponding columns of the 1st line, as shown in figure 83.

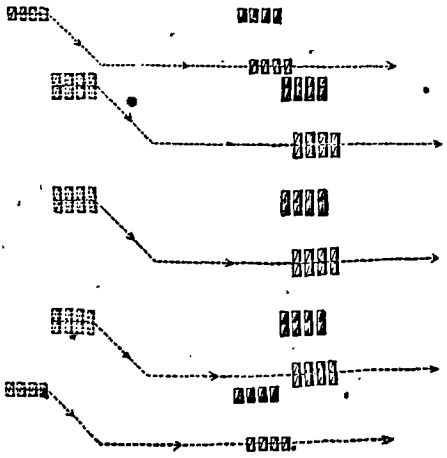


Fig. 83.

Passage of the line.

(For scale see p. 174.)

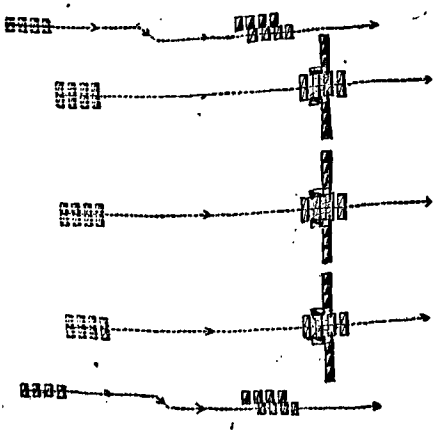


Fig. 82.

If, under similar circumstances, the 1st line retreats through the 2d, the same principle is conformed to.

(Fig. 82.) If the 2d line, formed in columns of attack, is ordered to pass through the 1st, which is deployed, then the columns pass through the intervals in the corresponding divisions of the 1st line.

If both lines, formed in columns of attack, meet on the march, those advancing move straight forward, while those in retreat oblique to the right, out of their way.

(Fig. 82.) When the 2d line, in columns of attack, passes though the 1st, which is deployed, it is necessary to increase the intervals in the centres of the divisions of the 1st line; this is done by the commands of the division and squadron commanders, without waiting for the orders of the commander of the line; to effect this, the inner flank platoons of each squadron wheel about by threes, then wheel to the right and left, respectively, by platoon, then wheel about by threes, and stand fast until the 2d line has passed, on which the commandants of platoons at once wheel into line.

If the 1st line is in retreat, deployed, or in columns of attack, and the 2d line is ordered to deploy before the 1st has passed it, then, in the first case, (the line retreating deployed,) the odd squadrons of the 1st line

break into columns by platoons right in front, the even squadrons left in front, and pass through the intervals on the right of their corresponding squadrons of the 2d line; having passed the line, these columns, by platoons, oblique towards each other, and thus form columns of attack; in the second case, *i.e.* the 1st line retreating in columns of attack, these columns pass through the intervals in the divisions of the second line, which are increased for their passage, as already explained.

When the columns of the 2d line have passed the 1st, they may either be deployed at once or remain in columns.

If the advancing 2d line is halted at less than 300 yards in front of the 1st, the latter does not take its proper distance until the next movement, unless it receives special orders to the contrary.

If the advancing 2d line is not halted at 300 paces from the 1st, but continues to advance, the latter follows the movements of the former at the prescribed distance.

When the 2d line passes the 1st, which is deployed, the latter at once forms into columns of attack, without awaiting the orders of the general commanding in chief.

The tactics give, in detail, the order of march, in review, for a corps of cavalry, with its artillery.

ORDERS OF BATTLE, AND GENERAL COLUMNS.

ORDERS OF BATTLE—GENERAL RULES.

To explain the orders of battle, the case taken is that of a division of cavalry, with its artillery.

By the order of battle of a division of cavalry is meant such a distribution of its parts that the division can act promptly against the enemy.

In the order of battle the regiments are placed in two, three, or more lines. The distribution of the troops in lines, and the formation of each line, depends upon the purpose of each order of battle.

The 1st line is usually deployed, and is called the line of battle; the troops of the 2d and 3d lines are formed in columns, and, according to the nature of the columns, constitute either *supports* or *reserves*: *e.g.*, if a line is of columns of attack, the troops thus formed are *supports*, but if the formation is in close columns of regiments by squadrons they constitute *reserves*.

The distance between the lines is usually about 300 yards.

The second line is intended as a support for the first, in case of necessity; it should, therefore, be formed in the order most suitable for this purpose. In conformity with this, it is formed into columns of attack; for these can be deployed more rapidly than any other column, and allow an easy passage of the line.

The purpose of the third line is to support the other two, and also to operate wherever its presence may be necessary. To fulfil this object, it is posted behind the centre of the other lines, and is formed in close columns by squadrons. It is placed behind the centre, because that position is about equally distant from the points where it will most probably be required, *i.e.* the flanks and the centre; it is formed in close columns by squadrons, because in that order the troops are more concentrated than in any other, and can, therefore, be conveniently moved wherever required, and can also, without any inconvenience, be divided and detached, as circumstances may render necessary.

EXPLANATION OF THE ORDERS OF BATTLE.

Divisions may form in *three orders* of *battle* and *one order* of *reserve*.

The first order of battle.—This is employed when the division is isolated, and does not intend engaging in a serious affair with the enemy; therefore, in this case a considerable portion of its force is in reserve. The general formation in this order of battle is: one line of battle, one line of supports, and one line of reserves.

Fig. 88 shows the peculiarity of the formation of a division of ten-squadron regiments.

Figs. 84 to 89 will indicate with sufficient clearness the formation of the different kinds of divisions of Russian cavalry.

It is only necessary to remark that eight pieces constitute a battery; that when half a battery is in reserve it is formed in double column on the centre, by sections; a battery in reserve is formed in double column on the centre, by half battery; when two batteries are in reserve, each is formed as just described for a single battery.

The skirmishers represented in the plates are furnished by the flanker, or lancer, squadrons of the regiment in the first line, except those of the division of light cavalry of the guard, which are furnished by a regiment (two squadrons) of Cossacks.

The second order of battle.—This is employed when the division is supported by other troops, and should present an extended front to the enemy.

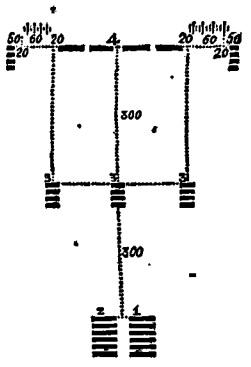
Divisions composed of six and eight squadron regiments are formed in two lines: the first consists of two regiments deployed; the second of the remaining regiments in columns of attack; there is no line of reserves.

Fig. 90 shows the peculiar formation of dragoon divisions in this order of battle.

Figs. 91 to 95 give all necessary information as to the formation of the other kinds of divisions.

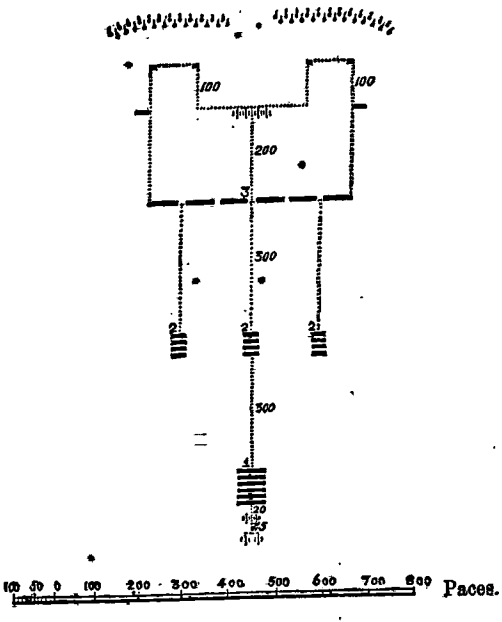
The third order of battle.—This is established for the case when a

Fig. 84.



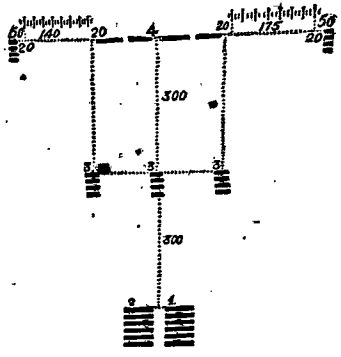
Division of cuirassiers of the guard, with one battery.

Fig. 85.



Division of light cavalry of the guard.

Fig. 86.



Division of army cuirassiers, with two batteries.

Fig. 87.

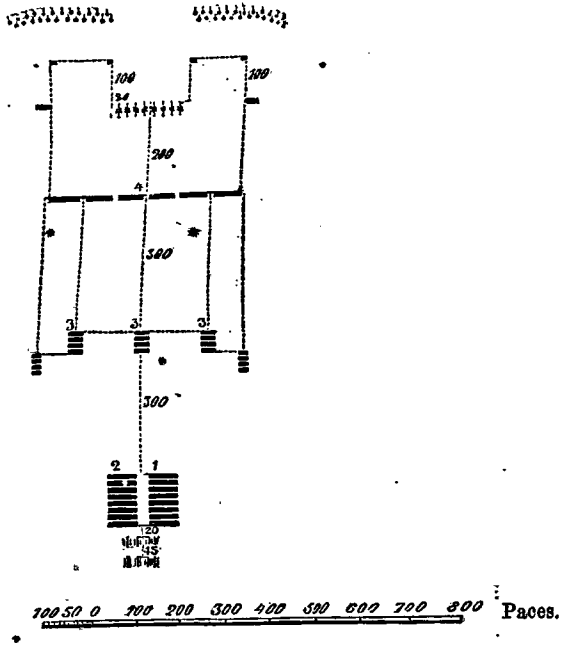


Fig. 88.

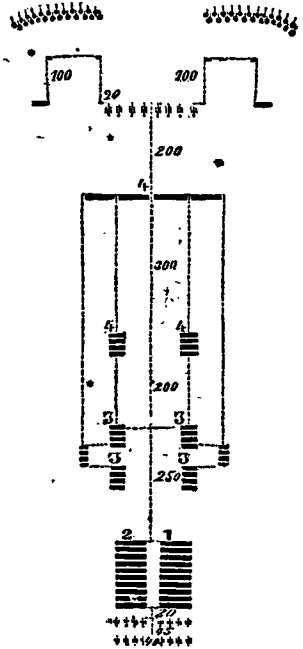


Fig. 89.

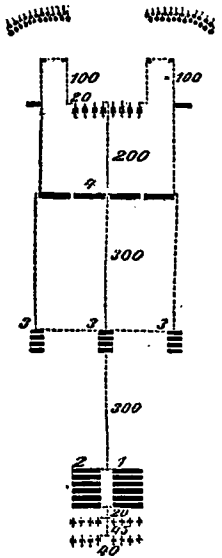


Fig. 87. 1st order of battle for a division of light cavalry, or reserve lancers, with two batteries.
Fig. 88. 1st order of battle for a division of dragoons, with three batteries.
Fig. 89. 1st order of battle for a division of reserve light cavalry, with three batteries.

Fig. 90.

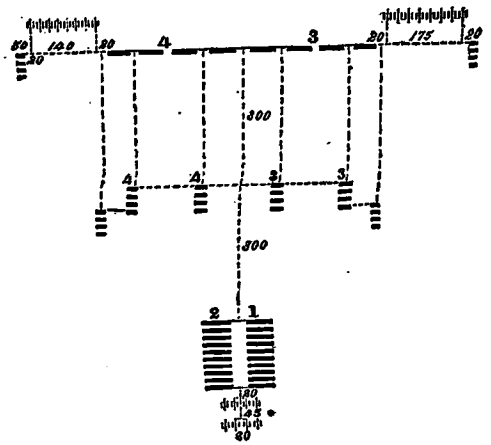


Fig. 90. 2d order of battle for a division of dragoons, with three batteries.

Fig. 91.

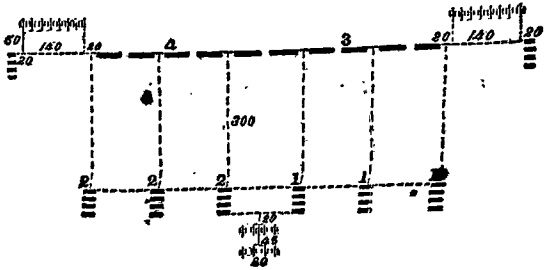


Fig. 91. 2d order of battle for a division of reserve light cavalry, with three batteries.

Fig. 92.

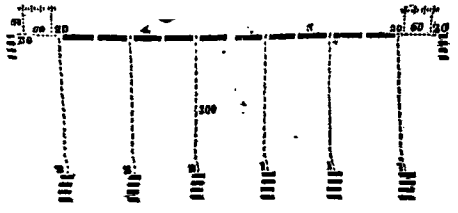


Fig. 93.

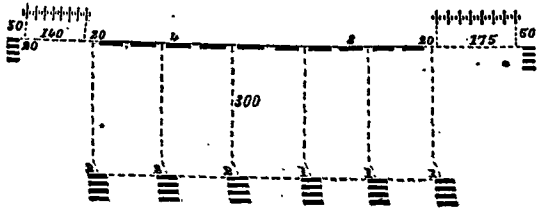


Fig. 92, 2d order of battle for a division of cuirassiers of the guard, with one battery.
Fig. 93. 2d order of battle for a division of army cuirassiers, with two batteries.

Fig. 94.

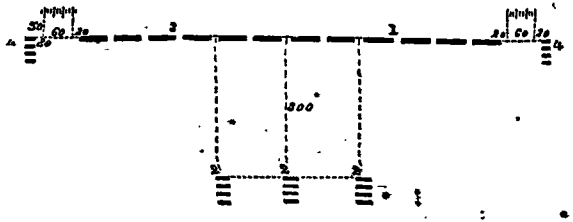


Fig. 95.

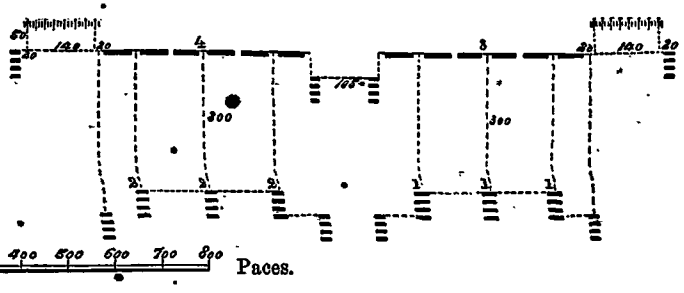


Fig. 94. 2d order of battle for a division of light cavalry of the guard, with one battery.
Fig. 95. 2d order of battle for a division of light cavalry, or reserve lancers, with two batteries.

Fig. 96.

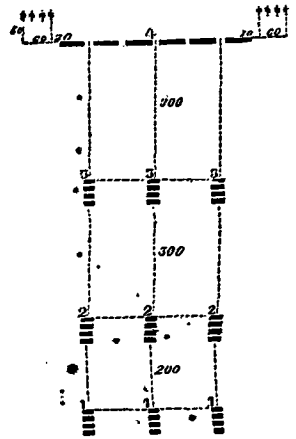


Fig. 97.

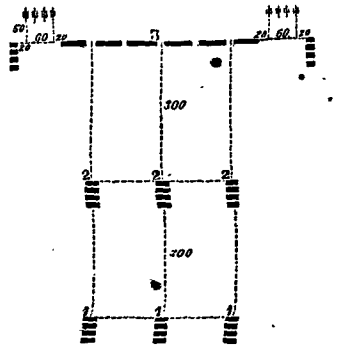
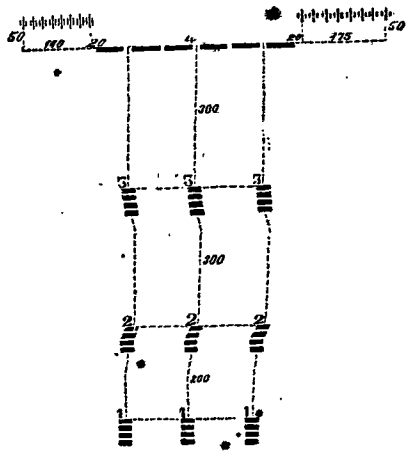


Fig. 98.



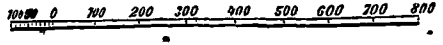


Fig. 96. 3d order of battle for a division of cuirassiers of the guard, with one battery.
Fig. 97. 3d order of battle for a division of light cavalry, with one battery.
Fig. 98. 3d order of battle for a division of army cuirassiers, with two batteries.

Fig. 99.

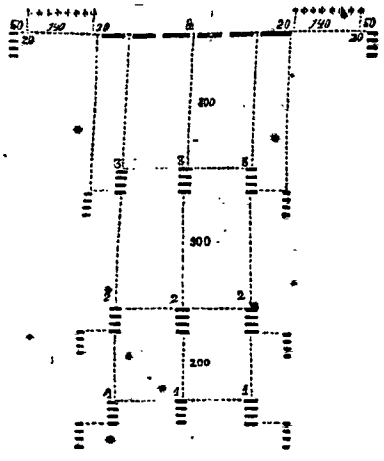


Fig. 100.

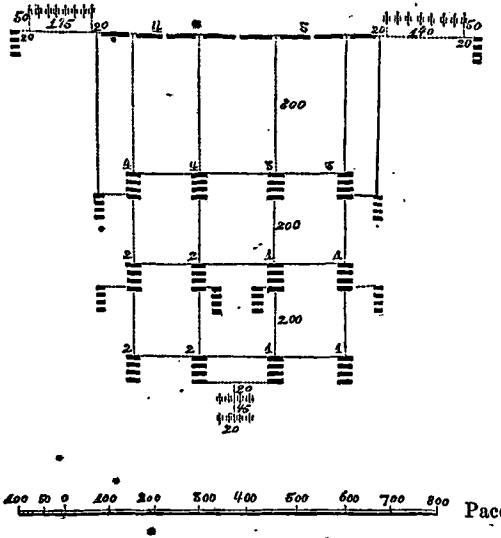


Fig. 101.

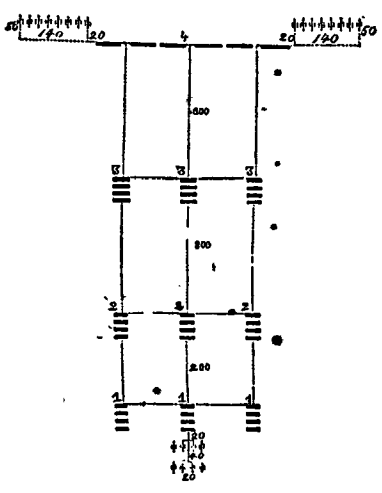


Fig. 99. 3d order of battle for a division of light cavalry, or reserve lancers, with two batteries.
Fig. 100. 3d order of battle for a division of dragoons, with two batteries.
Fig. 101. 3d order of battle for a division of reserve light cavalry, with three batteries.

Fig. 102.

Fig. 103.

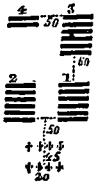


Fig. 104.

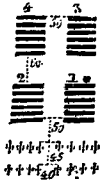


Fig. 102. Order of reserve of a division of cuirassiers of the guard.
Fig. 103. Order of reserve of a division of light cavalry of the guard.
Fig. 104. Order of reserve of a division of cuirassiers of the army.

Fig. 105.

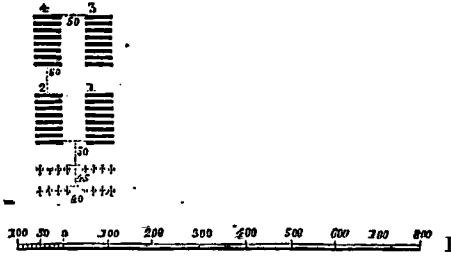


Fig. 106.

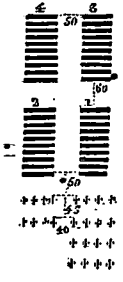


Fig. 107.

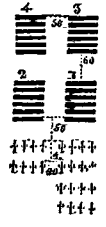


Fig. 105. Order of reserve of a division of light cavalry.
Fig. 106. Order of reserve of a division of dragoons.
Fig. 107. Order of reserve of a division of reserve light cavalry.

division is to make a very energetic attack. In this case the division is formed in four lines; in the first line, one regiment deployed, with artillery on both flanks; in each of the other lines one regiment in columns of attack.

Figs. 96 to 101 give the necessary details.

Fig. 97 shows one exception to the rule in the case of a division of but three full regiments and one Cossack regiment of two squadrons.

Fig. 100 shows an exception in the case of a division of ten-squadron regiments, in which each line is composed of parts of two different regiments.

The *order of reserve* serves to concentrate the troops. It presents the following advantages: from it the troops can pass in the shortest time to any of the orders of battle; they can be most rapidly formed into one or several columns; any portion of the division can be detached without disturbing the general arrangement. In this order the division is arranged in two lines of close columns by squadrons, the senior regiment of each brigade on the right. Figs. 102 to 107 give the details. The batteries are formed in double column on the centre by half batteries. If the general commanding deems proper, he may place the artillery of each brigade in the intervals between the regiments, increasing, for this purpose, the usual interval of fifty paces to such an extent that there may be an interval of twenty paces between each flank of the artillery and the adjacent regiment; in this case, when the division is at a halt the chiefs of pieces of the leading half batteries align themselves on the front rank of the leading squadrons; on the march they align themselves on the file-closers of the leading squadrons.

GENERAL COLUMNS.

These are columns in which all parts of the division are so arranged that it can easily pass to one of the orders of battle.

A division of cavalry may be formed in one or two general columns. This formation is employed for taking up a position preparatory to action, or when in route; therefore such columns are called, respectively, *offensive columns* and *marching columns.*

For movements to a flank, and turning movements, the formation in two columns is used; these are called, respectively, *flank* and *turning columns.* General columns having the senior regiment in front are right columns, those having the junior regiment in front are left columns, whether each regiment be right or left in front.

In the formation of a division into columns, the general rule is that the odd-numbered regiments are left in front; the even, right in front. The commander may place the regiments and brigades in the columns as he judges best, without regard to the general rule.

General columns, for one division, with one battery.

Fig. 108.

Fig. 109.

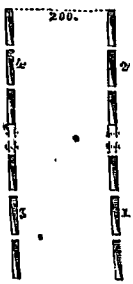


Fig. 110.

Fig. 108. In one column.
Fig. 109. In two columns.
Fig. 110. In two columns, right or left in front.

Figs. 108, 109, 110, show the arrangement of the regiments of a division, in one or two columns.

In marching columns, the regiments move by platoons, breaking by sixes, or threes, when a decrease in the width of the road renders it necessary.

For movements in retreat, the parts of the division are arranged in the columns as for an advance, but in inverse order..

If a flank movement is to be made in sight of the enemy, or at but a short distance from him, each line forms a separate column, marching by platoons or threes, so as to avoid all shifting of parts, and to be able to form rapidly into order of battle; during the flank march, the artillery should march 100 paces within the 1st line of the cavalry; therefore, if the batteries were in position at the beginning of the movement, they limber to the rear, and follow the movement as here prescribed.

Although, in figs. 102 to 110, the artillery is represented as being in the centre of the brigades, it may be concentrated at the centre of the division.

RULES FOR FORMING IN ORDER OF BATTLE.

General rules.—The employment of the different orders of battle, and their adaptation to the ground and circumstances, depend entirely upon the generals of division, unless it is specified in the instructions for the corps exactly how each division is to form.

In all cases the generals of division are allowed to make the partial changes rendered necessary by the ground; besides which, a principal object is the choice of the most advantageous position for the artillery, as its success depends upon this choice. It is a general rule for the orders of battle, that the junior brigades and regiments of cavalry, and divisions and batteries of artillery, should be in front; an exception to this rule is made in the case of batteries of position, as they are always placed in the first line, the light batteries being in reserve. When the artillery is posted on the flanks of the line, the heavy batteries are on the right flank, the light on the left. As circumstances may render it necessary to employ one part of a division instead of another, changes may be made in the foregoing rules; but it is required that the regiments composing a brigade be kept together, unless it is absolutely impossible to avoid separating them. Thus, in the 1st order of battle, if the 2d regiment is in the 1st line, the 1st regiment should be in the 2d line, and the 3d and 4th in reserve.

In the 2d order of battle, it may be permitted to compose the right wings of both lines of one brigade, and the left wings of the other brigade.

A division forms into order of battle at the command of its chief, who designates as the directing subdivision either one of the squadrons of the

1st line, or the artillery, according to the ground and circumstances. The subdivision of direction is taken, in preference, nearest the new position of the troops.

In forming into order of battle from column, or in passing from one order of battle to another, the shortest road should always be taken; never using, however, the individual oblique march, which should never be employed for more than one or two squadrons; the artillery may oblique. The preparatory formations, and the movements themselves, are made by brigade, or by regiment, according to circumstances.

In all the general formations there should be an interval of 20 paces between the extreme pieces of artillery and the flanks of the nearest squadrons; the interval between the pieces themselves is: in light batteries, 20 paces; in heavy batteries, 25 paces. If there is no artillery on the flanks of the 1st line, the flanker, or lancer, squadrons of this line are not aligned upon the rest of the line, but are in rear of its flanks, as prescribed in the school of the regiment.

Batteries, in front of the 1st line of cavalry, are always aligned upon the principal reserves of the skirmishers; if there are no skirmishers thrown forward, or if they are recalled, and the cavalry does not close up on the batteries, the latter fall back somewhat, and take post at from 100 to 120 paces in front of the 1st line.

The distance between unlimbered batteries and the 1st line is always measured from the line of pieces to the front rank of the 1st line.

Artillery in reserve is always placed in rear of the cavalry reserve.

The tactics then proceed to describe the different methods of passing to the orders of battle from column; of passing from one order of battle to another; of forming general column from the orders of battle. It then gives the application of the principles of the evolutions of the line to the orders of battle, under the following heads: advance in order of battle; retreat in order of battle; changes of front; passage of the line; the duties of skirmishers; of giving the commands. In all these cases the movements of the batteries are fully described. There is, in addition, a supplement, giving the position of the artillery in the different formations of a corps of cavalry.

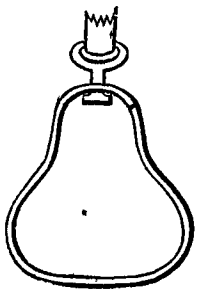
CHAPTER III.

EQUIPMENTS, ARMS, STABLES, HORSES, ETC., OF RUSSIAN CAVALRY.

HORSE EQUIPMENTS.

ALL the regular cavalry use the Hungarian saddle; this will be fully described when treating of the Austrian cavalry, and it is necessary to mention here only that the tree is of wood, not covered, the seat formed by a leather strap about 4 inches wide, nailed to the forks, and secured to the side-boards by leather thongs.

Light steel stirrups are used, the leathers passing through mortises in the side-boards:

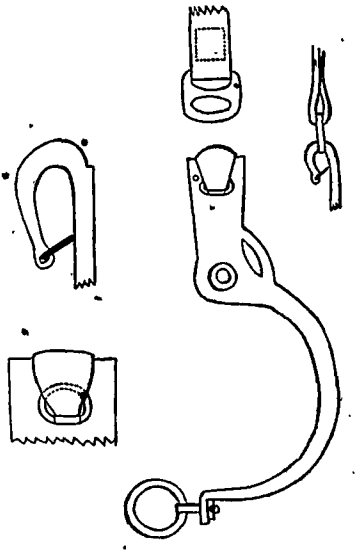


The cuirassiers use a swivel-stirrup, as shown in the annexed sketch; it is spoken of as a good one. Crupper and breast-straps of black leather. Girth of leather, and fastened by three small buckles: it passes over the tree and is secured to the side-boards by leather thongs. Two leather pouches are attached to the tree. Saddle-blanket of stout felt cloth; four thicknesses are generally used, with a layer of thin black leather on top, the whole secured in form by leather thongs passed through and through; if the horse falls off in condition, additional thicknesses of felt are used, and *vice versa*. The shoe-pouches are pockets sewed on to the leather cover of the saddle-blanket.

This felt saddle-blanket is regarded by the Russian officers as the best possible arrangement.

A small blanket is placed, folded, on the tree, under the schabraque. The schabraque is of thick woollen cloth, lined with coarse linen. Surcingle of leather, and fastens by means of ring and thong, in the fashion of a Mexican girth. Valise of cloth, not materially different from our own. Forage-bag of coarse white linen, open in the middle.

Bridle and bits.—By all the regular cavalry a curb and snaffle are used, both of steel. There are three marked peculiarities in the curb-bit: it hooks to a ring at the end of the cheek-strap, as shown in the following sketch; the rings are attached to the branches by means of swivels; the branches are reversed, that is, their convexity is turned towards the front.



With regard to the manner of fastening the bit to the head-stall, it will be perceived from the sketch that the little ring which is passed through the end of the hook of the branch, and rests against the flat side of the latter, effectually prevents the bit becoming unhooked, unless the ring is raised by the finger.

The snaffle-bit, a plain one without horns, is fastened to the head-stall by a chain and toggle, like the centring-bits in the United States service. This arrangement of the curb and snaffle permits the men to feed their horses during short halts without inconvenience; the Russian cavalry officers represent it as being every thing that can be desired. The curb-chain is of steel, and very heavy. There are three patterns of the curb used, of different degrees of severity.

The head-stall and reins are of black leather; no martingale. Crown-piece single, and has a spare curb-chain on top of it. Cheek-pieces buckle to the crown-piece, on each side, by one buckle. Each cheek-piece is a single strap, split at bottom to receive the rings by means of which the bits are attached.

The nose-band passes through loops on the cheek-pieces.

Two plaited cords of black leather run diagonally across the horse's face, from the brow-band to the nose-band; there is a leather rosette at their intersection.

There is nothing peculiar about the halter; by attaching the snaffle-bit and reins it becomes a watering-bridle; halter-rope 9 feet long and half an inch in diameter.

Forage-cord, for use when sent foraging, half an inch in diameter. Curry-comb and brushes large and coarse; brushes have the back and edges covered with black leather. Mane-combs of metal and of horn.

Spurs of steel, and permanently screwed to the heel of the boot.

Lancers have a lance-boot attached to each stirrup.

The Cossack saddle has a thick padding under the side-boards and on the seat; it places the man very high on his horse, so that his feet are always above the bottom of the belly.

Their bridle has but the simple snaffle-bit,—no curb nor martingale.

The Cossacks of the guard have spurs; the others have whips, slung to the wrist, instead of spurs.

The Mussulman cavalry make use of the well-known Oriental horse equipment.

SADDLING AND PACKING.

The tree being girthed tight, the pouches are filled; in these are placed the hatchet, curry-comb, brush, mane-comb, and other cleaning-utensils, with various small articles. The overcoat is then rolled into a long, thin roll, and strapped to the tree over the pouches; the roll falls down on each side, and is of such a length as to be just covered by the schabraque. If the uniform coat is to be carried on the saddle, it is placed as described for the overcoat.

The small blanket is then folded and placed on the tree.

The schabraque is put on and secured.

The valise, containing shaving-utensils, soap, and under-clothes, is now strapped tightly to the cantle, over the schabraque.

The forage-bag, containing habitually three days' rations, is strapped to the cantle, over the valise, and lies on the schabraque, falling down on each side between the valise and saddle. The stable-frock is carried either with the forage-bag or overcoat.

The hay, made up in elliptical rings by hay ropes, is strapped to the cantle, and lies on the schabraque behind the man's leg.

The forage-cord and halter are attached to the rear of the side-boards, under the schabraque.

Spare boots are carried on top of the valise, under the flap, heels outward. The camp-kettle fits on the end of the valise, and is secured there by straps. One man of every three carries a copper camp-kettle as above; every man a small hatchet; one man in every platoon carries a spade, slung to the pommel, the blade in a leather case.

ARMS AND ACCOUTREMENTS.

Cuirassiers.—Steel helmet, breast and back pieces; these are in some regiments of bright steel, in others gilt, in others painted black.

Sabre, (pallasch,) a straight, flat, double-edged blade, 39 inches long; it is the sabre described in Thiroux, pp. 146–148, as the model of "L'an XI et XII;" steel scabbard; guard of brass, and of the basket form.

Sabre-knot, a flat strap of brown leather.

Sabre-belt, of white leather waist-belt, with slings—plate hooks, like those of United States officers—and is worn under the cuirass.

Each man has one pistol, with percussion lock; a cord is attached to a ring in the butt, and passes around the neck; the *pistol* is carried in a holster on *the waist-belt*. *This rule is general for all the cavalry.*

In each platoon are four men who act, when necessary, as skirmishers; they are armed with rifled carbines, the barrels of which are about fifteen inches long; the carbine-sling is like that in use in the United

States service, and is worn very short; the rammer is attached to the sling.

A cartridge-box, holding twenty rounds, is slung over the left shoulder; the box is attached to the belt by swivels; cap-pouch on cartridge-box belt on the breast. The front-rank men are armed with lances 10½ feet long; pennons on the lances.

Lancers.—Lance 10½ feet long; pennons of same color as facings of the uniform; sling of leather; point of lance seven inches long; a lance-boot attached to each stirrup.

The sabre is three feet long in the blade; a little less curved, and rather broader and thinner, than the United States light-artillery sabre; scabbard of steel; guard with but one branch, and of steel.

Sabre-knot as for cuirassiers. Sabre-belt of brown leather, and worn under the coat. Each man has one pistol, as for cuirassiers. Four men in each platoon carry rifled carbines, with a longer barrel than that of the cuirassiers; these men have no lances.

Cartridge-box as for cuirassiers.

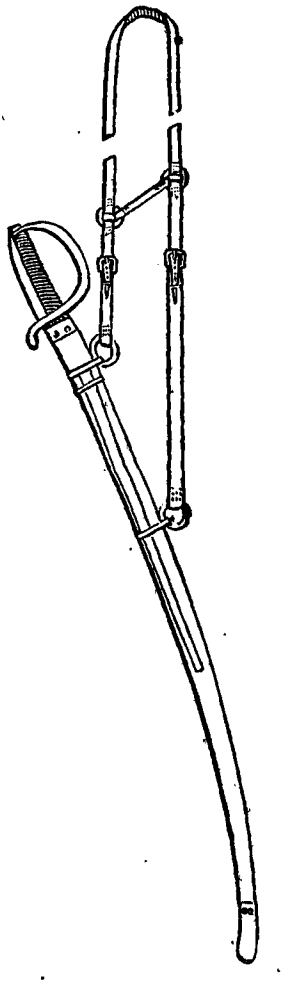
Hussars.—Sabre, sabre-belt, pistol, and cartridge-box, as for lancers. Four men in each platoon carry a rifled carbine, the rest a smooth-bore carbine; the carbine is always carried on the sling, there being no carbine-boot. Hussars have a sabretasch.

Dragoons.—Each man of the first eight squadrons armed with sabre and musket; the 9th and 10th squadrons armed as lancers.

In the first eight squadrons the arms, &c., are as follows:

Sabre blade and hilt as for hussars.

The annexed sketch shows the peculiar arrangement of the scabbard and belt; the scabbard being of leather, tipped with brass, the rings on the convex edge; bayonet-scabbard attached to flat side of the sabre-scabbard, by brass bands; the belt, a Circassian shoulder-belt, without waist-belt, and of such a length that when the sabre is drawn the top of the scabbard is just under the left elbow; when the sabre is in the scabbard the hilt is between the elbow and the body.



Smooth-bore musket, with the ordinary bayonet; the piece about four

inches shorter than the United States musket, and somewhat lighter; it has a common musket-sling. It is usually carried in a water-proof gun-case, with a separate sling, over the right shoulder, muzzle up, barrel against the back; this case opens by a slit under the stock, which is closed by straps and buckles; the butt end is sewed up. Cartridge-box carried as for hussars, but contains 40 rounds.

The sergeants alone carry pistols.

Cossacks of the guard.—Sabre and scabbard like those of the dragoons, except that there is no guard, and no bayonet-scabbard. Sabre-belt like that of hussars. Musket like that of dragoons, but no bayonet. Cartridge-box like that of dragoons. Lance 10½ feet long, without pennon; instead of having a lance-bucket attached to the stirrup, a leather strap is fastened to the butt of the lance, and the foot run through the loop before placing it in the stirrup. Each man also carries a pistol on his waist-belt.

Cossacks of the line of the Caucasus.—Sabre and scabbard as for the Cossacks of the guard; sabre-belt like that of the dragoons. A long musket slung over the shoulder; cartridge-box as for Cossacks of the guard; pipes for ten or twelve cartridges sewed on the breast of the coat. Two or more pistols, on waist-belt, and in holsters. A long, broad poniard. No lances.

Tscherkesses.—Armed as Cossacks of the line of the Caucasus. The officers carry bows and arrows, to enable them to cut off sentinels without creating an alarm.

Other Cossacks.—Usually armed with lance, sabre, and pistol. About ten men in every squadron carry muskets; in some cases all the men have muskets.

Mussulmen of the guard.—Armed in the Oriental style.

All the irregular cavalry carry their arms very close to the body, and so arranged as to make the least possible noise.

Mounted gendarmes.—Sabre and belt like those of hussars. Dragoon musket; bayonet-scabbard on the waist-belt; cartridge-box on a shoulder-belt. Pistol carried either on the saddle or the waist-belt.

Officers wear a sabre similar to that of their men.

HORSES, AND THE MANNER OF PURCHASING THEM.

In each regiment of cavalry, and battery of artillery, the horses are all of the same color.

The Russian cavalry is, probably, the best mounted in Europe,—certainly the best on the continent. The English heavy-cavalry horses may be somewhat better, but they have nothing for light cavalry to compare with the mass of the Russian animals for that purpose. The heavy-cavalry horses are mostly purchased in the provinces of Tamboff and Woronège, at an average price of $90 each.

The light-cavalry horses are obtained from the Ukraine and the steppes, at an average price of $45.

The artillery horses are bought in all parts of the empire, at about the same rate as those for the light cavalry.

There are no *haras* (breeding-studs) for the general service of the army. There is a commission charged with the general direction of the purchase, inspection, and distribution of remount horses.

They, if necessary, establish sub-commissions, in convenient localities. The horses are purchased by cavalry officers detailed for the purpose, and are then, if practicable, inspected by the commission, or one of the sub-commissions. Having passed the inspection, they are distributed among the regiments, at the rate, in time of peace, of about 150 per regiment each year. The colonel of the regiment then distributes them among the squadrons, where they are broken in and drilled by the old soldiers, under the direction of the captain commanding. The Russians have nothing corresponding to the "captain instructor" of the French service.

Horses are purchased at the age of from three to five years; those purchased at three years old are not used for a year or more.

About eight years' service is expected of a horse.

Remount horses enter the squadron at from four months to one year from the commencement of their drilling; depending upon the age of the animal, his disposition, &c.

Mares are preferred, as a general rule, but geldings and stallions are also used; and it is stated that no particular inconvenience is found to result from the employment of stallions.

The horses being once assigned always remain with the same men. Officers purchase their own horses, and are allowed forage, or a commutation therefor.

RIDING-HOUSES.

These are numerous, large, and well constructed.

The windows are usually arranged as in the French; Russian stoves are freely used for warming them.

The floor is of earth and sand. There is a wooden wainscot-lining, about six feet high, and having an inclination of about $\frac{6}{1}$; the corners not rounded off.

The riding-house of the Chevalier Guard, in St. Petersburg, is 300′ long, 95′ wide, and 25′ ceiling. One near the Paul Palace is 595′ long, 126′ wide, and 25′ ceiling. The great riding-house at Moscow is much larger. The two latter are used for drills and inspections during the winter. There are no pillars in any of these.

STABLES, ETC.

There is nothing remarkable in the Russian stables. The floors are

generally of plank, a little straw being kept under the horses' fore-feet during the day; in some stables the floor is of clay.

As a general rule, the simple swinging bar is used to separate the stalls; sometimes there is no division whatever; for wicked stallions the stalls are boarded up.

In many cases they use no hay-rack,—merely a long wooden trough, one end of which is divided off for the oats.

In some cases they use wooden or iron racks and mangers.

In some stables a bin is arranged for the litter, under the manger; in others it is kept in the stable-yard, under cover.

The saddles, bridles, and other equipments are usually kept in the stables; the bridles being hung on pins attached to the stall-posts; the saddles, blanket, &c., on a shelf extending between the heel-posts.

Some of their stalls are six feet wide; as a general rule they are quite large. The stables are well ventilated, and kept in good order.

In some stables, the quarters for the men are in the 2d story, over the stables.

The horse-hospitals are usually in separate buildings, with separate box stalls, (about $9' \times 7'$,) boilers for making mashes, &c.

The horses are cleaned twice a day, watered twice or thrice, and fed three times.

The daily ration for a light-cavalry horse is 9 pounds of hay, 11 quarts ($13\frac{3}{4}$ pounds) of oats, 3 pounds of straw. The heavy-cavalry horses receive 2 quarts of oats more than the light-cavalry.

The hay is generally chopped before being fed to the horses.

The ration is increased with the difficulty of the service; the above being a minimum for easy garrison service.

The horses are shod in each squadron by its shoeing-smith.

There is nothing peculiar in the shoes, which are light, but strong, and with small heels.

FIELD SERVICE.

In the field each horse carries, habitually, 3 days' rations of oats and hay. The animals are sometimes tied by the halter to a picket-rope, or a picket-stake, and sometimes fastened by the right fore-foot to a picket-rope on the ground.

When picket-pins are used, they are cut by the men on the spot, or carried along if it is expected to encamp in a place destitute of timber. The Cossacks hobble their horses.

The Russian cavalry do not spare their horses at drill, or on the march, but bestow all possible pains upon them in the stable, or in camp. In bivouac, or in camp, they are clothed with the saddle-blanket if the weather is bad and cold.

The habitual gait on the march is the walk, of about 3½ miles per hour; sometimes the trot is used; every hour or so a halt of a few minutes is made, after which the men lead the horses for about three-quarters of a mile. An ordinary march is from 16 to 26 miles a day, depending on the nature of the country.

The Cossacks regard a march of 45 miles as nothing extraordinary.

After drill the horses are walked until they are cool.

They are never unsaddled until quite cool.

At squad drills, in warm weather, some men are present with buckets of water and sponges to wash out the horses' mouths occasionally.

In the translation of the regulations for field service in time of peace and in time of war will be found much information in regard to these subjects. In the field, the cavalry carry 1 day's rations in a haversack.

REMARKS UPON COSSACKS, DRAGOONS, LANCERS, ETC.

There are two peculiarities which cannot fail to arrest the attention and command the reflection of the observer of the Russian cavalry; these are: the general division of the cavalry into regulars and irregulars; and the corps of dragoons.

The irregulars may be comprehended in the general name of Cossacks. Yet their peculiarities of armament, costume, and action are as varied as their origin; while the sources of the latter are as multifarious as the tribes which compose the mass of Russian nationality, and the circumstances which, through centuries of warfare, have finally united into one compact whole a multitude of conflicting and heterogeneous elements. But, with all this diversity, there are important and peculiar characteristics which pervade the mass, and are common to every individual, with as much uniformity and certainty as that with which the firm government of the Czar is now extended over them. These peculiarities are: intelligence, quickness of vision, hearing, and all the senses; individuality; trustworthiness on duty; the power of enduring fatigue, privation, and the extremes of climate; great address in the use of weapons; strong feeling for their common country; caution, united with courage capable of being excited to the highest pitch: in short, the combination of qualities necessary for partisan troops. The events of more than one campaign have proved, besides, that these irregulars can be used successfully in line against the best regular cavalry of Europe.

Circumstances of geography and climate have given to these men a race of horses in every way adapted to their riders; the Cossack horse is excelled by none in activity and hardiness.

The Cossack neglects no opportunity of feeding his horse; during short halts, even under fire, he gives him whatever is to be had; the horse refuses nothing that is offered him, and eats whenever he has the opportunity, for he has not acquired the pernicious habit of eating only at

regular hours. Some idea may be formed of the power of endurance of the Cossacks and their horses from the fact that, in a certain expedition against Khiva, there were 3,500 regular Russian troops and 1,200 Cossacks: of the regulars but 1,000 returned, of the Cossacks but 60 perished.

The tendency of events, during the present century, has been to assimilate the organization of the Cossacks to that of the regulars, to a certain extent: whether the effect of this has been to modify or destroy their valuable individual characteristics may yet remain to be proved in a general war; the events of the campaign of Hungary are said to indicate that more regularity of action has by no means impaired their efficiency.

This brief description of the qualities of the irregular cavalry indicates at once the use made of them in war; they watch, while the regulars repose. All the duty of advanced posts, patrols, reconnoissances, escorting trains, carrying despatches, acting as orderlies, &c., is performed in preference by the Cossacks; the consequence is, that, on the day of battle, the regular cavalry are brought upon the field in full force and undiminished vigor. Under cover of these active irregulars, a Russian army enjoys a degree of repose unknown to any other, while, on the other hand, it is difficult for their antagonists to secure their outposts and foil their stealthy movements.

The rapidity and length of their marches are almost incredible; a march of 40 miles is a common thing; they will make forced marches of 70 miles; in a thinly-settled country they have, in two days, made six marches of ordinary cavalry without being discovered.

In concluding this subject it is impossible to repress the conviction that in many of the tribes of our frontier Indians, such as the Delawares, Kickapoos, &c., we possess the material for the formation of partisan troops fully equal to the Cossacks; in the event of a serious war on this continent, their employment, under the regulations and restrictions necessary to restrain their tendency to unnecessary cruelty, would be productive of most important advantages.

In our contests with the hostile Indians, bodies of these men, commanded by active and energetic regular officers, and supported by regular troops, would undoubtedly be of great service.

The term *dragoon* was originally applied to troops who were at the same time cavalry and infantry. For example, the French dragoons of the time of Louis XIV. would on one day, as cavalry, meet and defeat the Imperial cuirassiers, and on the next day form the assaulting column in the attack of a breach.

It is necessary not to confound the true dragoon with such troops as our mounted rifles, for instance, whose proper purpose is to use the horse

merely as a means of rapid locomotion, *always* dismounting and fighting on foot upon reaching the scene of action.

The Russian dragoons are the only real dragoons in the world; their arms, equipment, &c., have been heretofore described.

They are principally employed in covering retreats, occupying isolated posts, making sudden attacks upon villages, &c.

When they dismount to fight on foot, one man of every three remains mounted, and holds the horses of the others; one officer remains mounted with each squadron.

When dismounted, they conform to the infantry tactics.

Since the 9th and 10th squadrons, armed as lancers, do not dismount, each regiment furnishes a battalion of about 800 infantry.

The idea has been thoroughly carried out; for they are in reality good cavalry and good infantry.

It is a question, at least worthy of consideration, whether it would not be advantageous in the United States service to make real dragoons of the regiments now nominally so, employing them always in those portions of our territory where the Indians frequent the plains but retire to the mountains when hard pressed; at the same time making the so-called cavalry regiments mere regiments of light cavalry, to act only on the plains, and not to be expected to fight on foot.

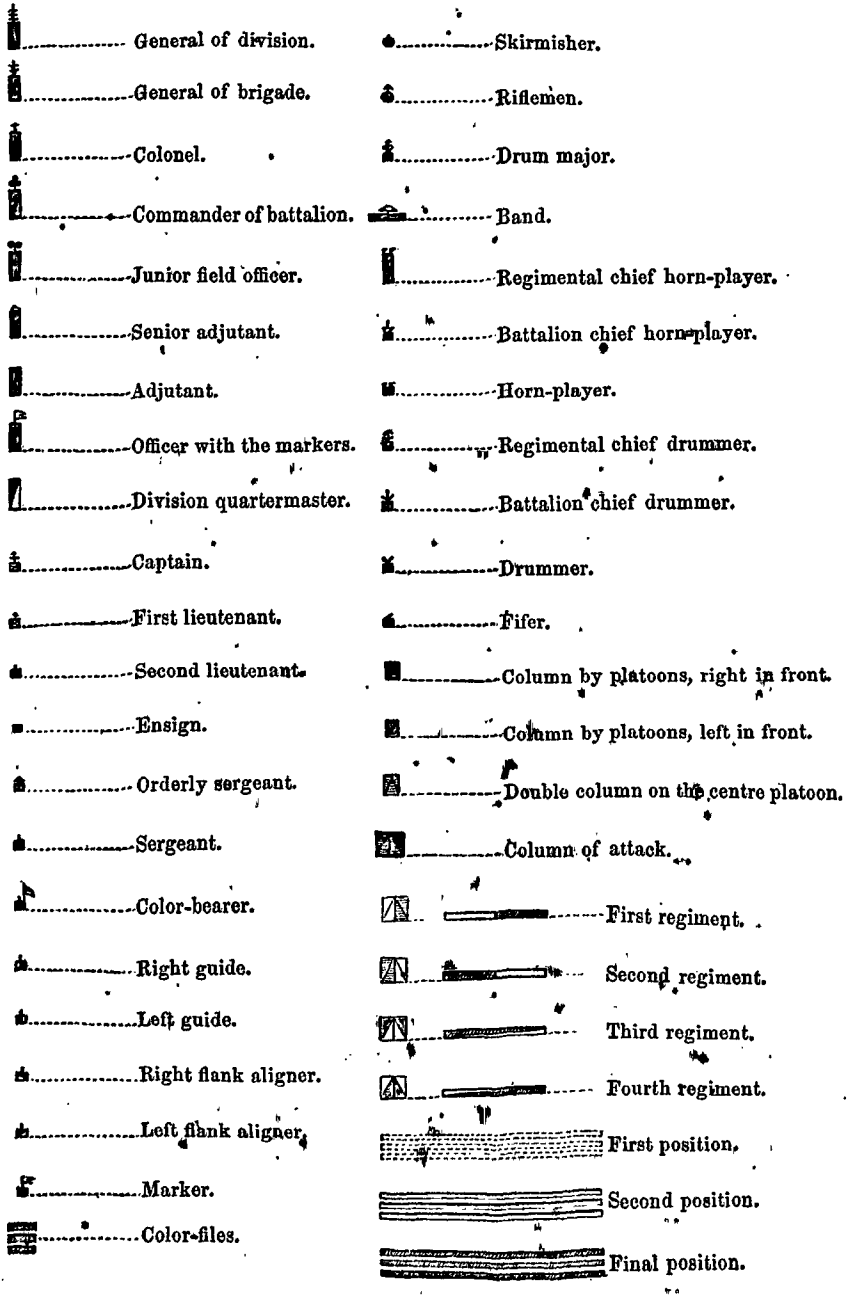
The lances of the front rank of the cuirassiers are intended to be used only in close order; while the lancer regiments proper are taught to use the lance both in close and open order.

From the great use of the lance in the Russian service, it will be seen that it is a favorite weapon with them.

I have been told by an old general of Cossacks, who served from Austerlitz to Paris, and against the Persians and Turks, that "the Cossack never uses his sabre, but depends altogether on his lance, and uses his carbine only to give signals." He was also strongly in favor of snaffle-bits, sharp spurs and Balaklava charges. Nevertheless the chasseurs d'Afrique told marvellous stories of the expertness of the Cossack in the use of the musket on horseback; and the Cossacks of the line of the Caucasus, engaged almost daily in hand-to-hand conflicts, have abandoned the lance, and they are more dreaded by the mountaineers of the Caucasus than any other Russian troops.

Against the Indians of our plains, who have no sabres, the far-reaching lance would no doubt be an effective weapon; yet a light sabre would be about as much so, and far less in the way

EXPLANATION OF SIGNS.



CHAPTER IV.

ON THE RUSSIAN INFANTRY.

EXTRACTS FROM THE INFANTRY TACTICS.

THE habitual formation of the infantry is in three ranks; from eight to three men are formed in two ranks; three or two men in one rank.

A regiment may be composed of two, three, four, or five battalions, which are numbered as the 1st, 2d, 3d, &c.

When the regiment is deployed in one line, the battalions are posted from right to left in the order of their numbers.

Every battalion consists of four companies, arranged as follows:—

In the grenadier regiments, of one grenadier and three fusileer companies; in the infantry regiments, of one grenadier and three musketeer companies; in the carbineer regiments and rifle battalions, of one carbineer and three rifle companies. Sapper battalions are composed of four companies, called 1st, 2d, 3d, and 4th sapper companies. In the interior garrison regiments, &c., the companies are known only by their numbers.

In all the regiments the grenadier or carbineer companies bear the numbers of their respective battalions; the other companies are numbered in a regular series through the whole regiment: *e.g.*, in the first battalion the fusileer, musketeer, or rifle companies are numbered as 1st, 2d, and 3d; in the second battalion they are the 4th, 5th, and 6th; and in a similar manner for the remaining battalions.

Battalions may, exceptionally, consist of three companies.

Grenadier and carbineer companies consist of men distinguished by their courage in battle, good conduct, zeal for their duties, and clear understanding of the drill.

The men are arranged in each company according to height, the tallest third part being in the front rank, the next tallest in the rear rank, the remainder in the centre rank.

In sizing the battalion, the companies are so arranged that the men in the right wing are sized from right to left, and those in the left wing from left to right, except the eighth platoon, which is also sized from right to left.

Incomplete files are placed on the left flanks of the platoons; if only one man is wanting in a file, the centre rank is left vacant.

The files are numbered from right to left in each platoon; the men in each rank have the number of their file.

Each platoon is divided into two half platoons; that on the right is the first, the other is the second.

Each platoon is also divided into sections of not less than four nor more than six files each.

The sections are numbered from right to left.

To equalize the platoons of a battalion, men may be transferred from one company to another; but the élite companies are kept distinct from the others.

Platoons should not contain less than fourteen files; therefore, when a battalion consists of from 56 to 84 files, it is divided into four platoons; if of from 84 to 112 files, into six platoons; if of more than 112 files, into eight platoons.

Battalions of three companies are divided into six platoons, unless they contain less than eighty-four files, when they are divided into four platoons. The best-drilled men are placed, in preference, on the flanks of platoons, half platoons, and sections, then in the front rank; but the rule with regard to size must be violated as little and as imperceptibly as possible.

The ranks are twenty-eight inches apart, measured from heel to heel.

The interval between battalions of the same regiment is twenty paces.

The pace, when used as a measure in the infantry service, is two and a half feet, (30″.)

POSTS OF THE OFFICERS.

(Fig. 111.) The colonel, mounted, is from fifty to sixty paces in front of the centre of the regiment.

The commanders of the battalions are thirty paces in front of the centres of their respective battalions.

The battalion adjutant is on the right flank of the battalion, on the right of the field music; the junior field officer on the right of the battalion adjutant; the officer detailed as marker is on the right of the junior field officer of the first battalion; the regimental adjutant on the right of the marker; all these officers are mounted.

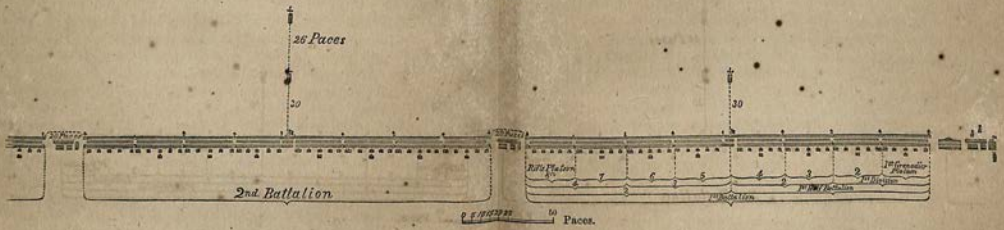
In every battalion the officers are assigned to platoons as follows:

The 1st platoon is commanded by the captain of the grenadier company.

The 2d	"	"	1st lieut.	"	1st "
The 3d	"	"	captain	"	" "
The 4th	"	"	1st lieut.	"	2d "
The 5th	"	"	captain	"	" "
The 6th	"	"	1st lieut.	"	3d "
The 7th	"	"	captain	"	" "
The 8th	"	"	1st lieut.	"	grenadier "

Formation of a regiment.

Fig. III.



The Grenadier company is divided—one platoon on the right of the battalion, the other on the left.

The commanders of the first 7 platoons are posted on the right of the front rank of their platoons; the commander of the 5th platoon separates his platoon from the color-guard; the commander of the 8th platoon is on the left of its front rank, the next officer (the 2d lieutenant of the grenadier company) on the right of its front rank.

The commander of the 1st platoon of each division commands the division; the rest of the officers are posted, as file-closers, two paces in rear of the rank of non-commissioned file-closers.

POSTS OF THE SERGEANTS.

The sergeants remain with their companies, but the number may be equalized among the platoons.

In battalions of 8 platoons, when there are 25 or more files in each platoon, there must be at least 67 sergeants; if the platoons have less than 25 files, there must not be less than 59 sergeants.

Any deficiency in the number of sergeants is made up by detailing the senior corporals as acting sergeants.

The sergeants are posted as follows:

1 as color-bearer.

5 color-sergeants.

1 sergeant separates the color-files from the 4th platoon.

3 markers, whose posts and duties will be given hereafter.

16 right and left guides of platoons: of these, 9 stand in the rear rank and cover the officers posted in the front rank; the remaining 7 left guides are in the rank of file-closers, behind the left files of their respective platoons.

16 sergeants, called *aligners*, whose duty it is to mark the positions of the flanks of the platoons in new formations, are posted behind the second files from the flanks of each platoon; as far as regards the posting of these sergeants, the color-guard is not regarded as belonging either to the 4th or 5th platoon; the rest of the sergeants are posted in the rank of file-closers, at equal intervals apart. Among this number are: 1, the orderly sergeants, who are the 2d file-closers from the right of the platoons, commanded by their captains; 2, the reserve and vice markers, (for whom see under the head of markers,) who are also posted as file-closers.

The non-commissioned file-closers are two paces behind the rear rank.

THE COLOR-GUARD.

This consists of 6 color-sergeants and 4 color-files, (12 men.) The color-sergeants are selected from among those of the battalion who are most rigid in the performance of their duty, and who have the greatest regularity in marching; they are selected of the same height as much as possible.

The honor of bearing the color is reserved for the sergeant who has performed the most meritorious services, choosing, if possible, one who is decorated. The color-sergeants are formed in 2 ranks,—the color-bearer and 2 sergeants (one on each side of him) in the front rank, the remaining 3 in the rear rank; as will be seen under the head of markers, the centre rank is filled by 3 sergeants, who are markers.

The color-sergeants are posted in the centre of the battalion between the color-files, and belong to the 5th platoon, with which they execute all the movements.

The sergeant covering the color-bearer in the rear rank is called the *assistant.* Ensigns may be detailed as assistants if sufficiently well drilled.

Two color-files are placed on each side of the color-sergeants; they are separated from the 4th platoon by a sergeant, but are alongside of the commander of the 5th platoon.

In battalions of 6 platoons the color sergeants and files are as just explained; in battalions of 4 platoons the color-files are as before, but there are only 4 color-sergeants, of whom 1 is color-bearer, another on his left, the remaining 2 in the rear rank.

Every battalion has a color.

MARKERS.

As markers there are selected adroit, active, and intelligent sergeants and privates,—in preference, those who can read and write. The rules observed in the choice of color-sergeants also apply to the markers. There should be 8 markers in each battalion, *i.e.* 2 for each company, of whom 1 is a sergeant, the other a private; the privates are called *vice markers.* Of the 4 sergeants, 3 have guidons, but the 4th, called the *reserve marker,* has none. Those with guidons cover the color-sergeants in the centre rank; they wear no knapsacks, and carry the guidon-staff in the muzzle of their muskets. The three markers with guidons are numbered as 1, 2, and 3, from right to left; No. 1 marks the new position of the right flank of the battalion, No. 2 the centre, No. 3 the left flank: if the battalion is in column, they are similarly employed in marking the new position of the head of the column.

The reserve and vice markers are in the general line of file-closers, armed and equipped as the rest of the battalion.

In battalions of 6 platoons the markers are posted as just explained, but in those of 4 platoons those with guidons are in one rank, in rear of the centre of the 3d platoon, 2 paces behind the rank of non-commissioned file-closers.

In regiments of more than two battalions an officer is detailed as marker; his post has already been given.

When the regiments have but two battalions each, an officer is detailed in each brigade as marker.

A senior officer is always detailed in each division to direct the markers.

MUSICIANS.

The band is posted 4 paces on the right of the first battalion, on the alignment of the centre rank.

The field music of the first battalion is on the right of the band; in the other battalions it is 4 paces from the right flank of its battalion.

THE GENERAL INSTRUCTION OF THE REGIMENT.

The colonel, or, in his absence, the officer next in rank in the regiment, is responsible for the general instruction of the officers, sergeants, and men of the regiment.

INSTRUCTION OF THE OFFICERS.

Every officer must know every thing in the infantry tactics; the mere knowledge is insufficient: they must be able to explain the rules, and teach the soldiers all that is required of them, beginning with the position, facings, marching, manual, &c.

The colonel must maintain a constant eye to this, and assemble the officers himself, or cause the commanders of battalions to do so, for separate instruction.

INSTRUCTION OF THE SERGEANTS.

They are required to know every thing in the schools of the recruit and the company, the skirmish drill, and outpost duty; they must also be able to instruct the men in these subjects, and must know their duties in the battalion drill. The captains are immediately responsible for this instruction, under the supervision of the commanders of battalions.

INSTRUCTION OF RECRUITS.

The first year of a recruit's service is the most difficult, and the most important, as forming his future character as a soldier; his instruction in the drill ought not to be pressed until he fully comprehends the first principles.

1*st month.*—Instruction similar to that of the cavalry recruit.

2*d month.*—The recruits begin to learn to chant the signals for skirmishers, commencing with the simplest; they learn to march in common time, quick time, and the run; are taught the skirmish drill without arms, first by commands, then by signals, always placing platoon opposite platoon, that they may the more readily understand the relation of their movements to the enemy. They are also taught some of the field duties, such

as the nature of guard duty, of advanced posts, patrols, and the duty of a sentinel in the event of the appearance of the enemy.

Especial care is taken to exact a proper soldierly bearing only by degrees; for too much attention to it in the beginning produces stiffness in the position, facings, and marching, exhausts the men, and does more harm than good. Every day, except on days of rest and feasts, the recruits are assembled by companies, half an hour before dinner or supper, and the signals are blown for their instruction.

3*d month.*—The recruits are carefully and correctly taught the facings, marching, loading as skirmishers without the motions.

After this the instruction proceeds regularly, as laid down in the school of the recruit.

There should be two drills each day; each drill lasting not longer than from one hour to one hour and a half.

The position of the soldier is essentially the same as in the United States tactics.

The facings are made by turning on the left heel, steadying the cartridge-box with the right hand.

The about-face is made to the left, instead of to the right; instead of placing the right foot behind the left, it is carried forward until the heel is against the joint of the left great toe; the turn is made on both heels, and the right heel brought up on the same line with the left, on the completion of the movement.

MARCHING.

The recruit is instructed in marching by the numbers, first in 3 motions, then in 2, finally in 1.

TO MARCH IN THREE MOTIONS.

1*st motion.*—(Fig. 112.) Without moving the body or hip, advance the left foot just clear of the right, the toe touching the ground, heel a little raised, knee straight.

2*d motion.*—(Fig. 113.) Raise the left foot, and move it nearly 28 inches in front of the right heel, knee straight, foot parallel to, and 10½ inches above, the ground.

3*d motion.*—(Fig. 114.) Incline the body gently forward, plant the left foot flat on the ground, 28 inches from the right, (from heel to heel,) rest the weight of the body on the left leg, and bring the right foot to the position shown in the engraving.

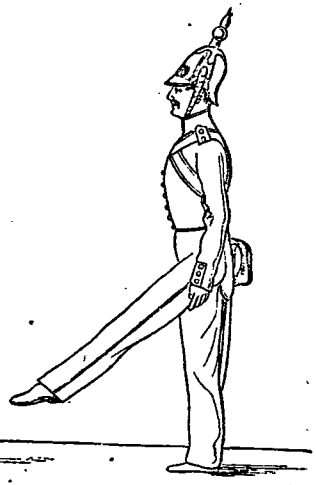
The right foot is then advanced, by the motions, as described for the left foot.

The recruit, being well instructed in marching in 3 motions, is required to execute the same thing in 2 motions:

1*st motion.*—Execute the first two motions of the preceding.

Fig. 112.

Fig. 113.



Marching.

Fig. 114.

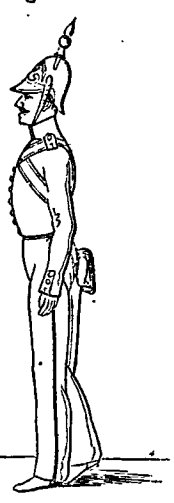
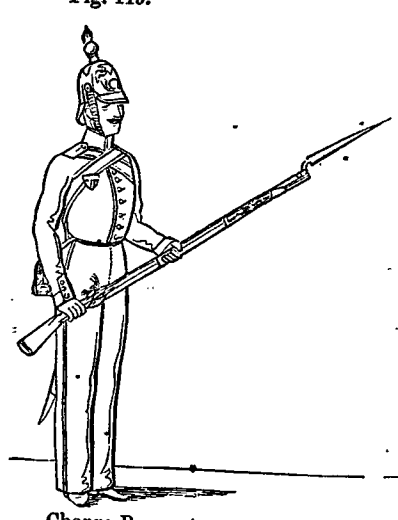


Fig. 115.



Charge Bayonet.

Fig. 116.

Slope Arms.

Fig. 117.

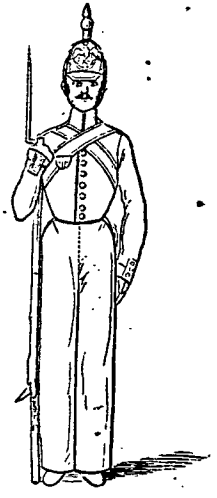


Fig. 118.

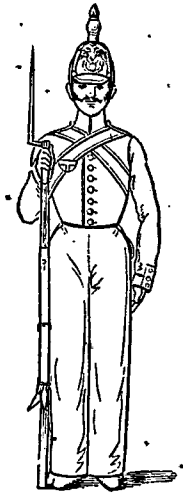
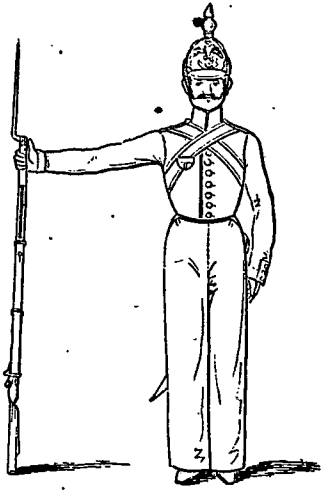


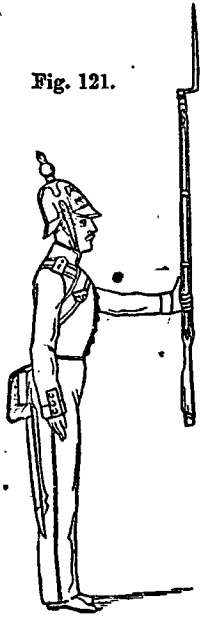
Fig. 119.

Fig. 120.



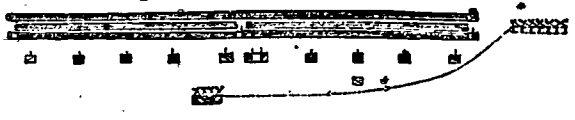
Salute at an order.

Fig. 121.



Inspection of Arms.

Fig. 122—Formation of a Company.



2d motion.—Execute the third motion of the preceding, with the difference that the right foot does not remain in rear, as shown in fig. 114, but is at once moved forward.

The march in one motion is executed according to the principles just laid down.

Common time is at the rate of from 70 to 72 steps per minute, each step 28 inches, from heel to heel.

Quick time is at the rate of 110 steps per minute, and 28 inches long

The free step differs from the last only in a free swinging of the arms being permitted; the musket is carried at a slope, the right arm swinging freely, across the body, from the elbow down, in cadence with the step; this step is much used, even when passing in review.

The run is at the rate of 150 steps per minute, each step 28 inches; the piece is carried at a trail, the left hand steadying the cartridge-box.

The *individual oblique step* does not differ essentially from that in Scott's tactics.

The *route step* is at the rate of 100 steps a minute, and is of the usual length of 28 inches, so that the men may march about 2¾ miles per hour. The men are permitted to carry their arms at will, and to move easily, it being only required that they keep their places, and do not lag behind; if bayonets are fixed, the muzzles must be up.

THE MANUAL OF ARMS.

This is generally so similar to that in the United States service, that merely some exceptions need be noted.

Present arms.—The piece is held in front of the left breast.

Charge bayonet.—Lock-plate half turned up, the right hand (grasping the handle) is on the seam of the pants, the right arm being extended to very nearly its full length; hollow of the right foot *against* the left heel, (Fig. 115.)

Right shoulder shift arms.—As in the United States rifle tactics, except that the right hand grasps the small of the stock.

Slope arms.—The left hand is raised and thrown forward, so that the stock rests on the shoulder just above the guard, the barrel at an angle of about 45°, (Fig. 116.)

Parade rest.—The feet are not moved, the barrel is thrown across the body, and rests in the hollow of the left forearm; the hands on the gun-sling, left hand above the right.

Figs. 117 to 120 show one method of saluting by a sentinel at an order.

When the soldier hands his musket to the inspector, he holds it in his left hand, at arm's length, the piece vertical, the lock towards the inspector, the left hand grasping it just above the lock, (Fig. 121.)

SCHOOL OF THE COMPANY.

Each company of not less than 28 files is divided into 2 platoons; if the company consists of less than 28 files, it composes only a single platoon. In the tactics a company of 2 platoons takes the name of division.

(Fig. 122.) In an isolated company, the officers, sergeants, &c., are posted as follows:

The captain 15 paces in advance of the centre; the senior lieutenant in the front rank on the right of the 1st platoon, which he commands; the 2d lieutenant on the left of the 2d platoon, which is his command; the 3d lieutenant is in the front rank, between the platoons; if there are other lieutenants, they are posted as file-closers, the senior behind the centre of the 1st platoon, the junior in rear of the 2d platoon.

If there is a deficiency in the number of officers, other than file-closers, the number is made up by sergeants, beginning with the orderly sergeant. The sergeants are posted as follows:

Four right and left guides of platoons; when the company is in line, the right guide of the 1st and both guides of the 2d platoon are in the rear rank covering the officers; but the left guide of the 1st platoon is in the rank of file-closers, behind the left file of his platoon.

The 4 sergeants detailed as aligners (to mark the new front in the different formations) are behind the 2d files from the flanks of the platoons.

The orderly sergeant is the 2d file-closer from the right of the 1st platoon. The remaining sergeants are posted as file-closers at equal intervals from those already mentioned.

The drummers, fifers, and horn-players are formed in one rank, on the alignment of the centre rank, 4 paces from the right of the company.

For instruction in the manual, &c., the company is sometimes formed on three sides of a square, each rank forming one side.

In the different firings, the rear-rank men pass their pieces to those in front of them.

The individual oblique step is never used for a distance greater than ten paces; for oblique movements longer than that, each man half faces to the right or left.

To wheel a division (company of two platoons) to the right, on a fixed pivot, the first platoon wheels to the right, and the second acts as prescribed in the United States tactics for the second company of a battalion changing front forward on the first company. The division also changes front on the centre.

In route, troops march in column by platoons, half platoons, or sections. The distance between the ranks, in this case, is from three and a half to five feet.

OF SKIRMISHERS.

Circumstances and the nature of the ground sometimes make it necessary for infantry to act in scattered parties, instead of in close, compact order; *e.g.*, to occupy forests, copses, villages, or to protect different movements of troops acting in close order, such as deployments, flank marches, movements in advance or retreat, &c.; such service is called *skirmishing*.

As entire regiments are seldom deployed as skirmishers, there are in each company forty-eight men who are perfectly instructed in that duty, and are called *skirmishers*. Of this number, twenty-four are held in constant readiness to act upon the first call for skirmishers, and are called *active skirmishers;* the remaining twenty-four are held in readiness to support or replace the others, in case of need, and are called *reserve skirmishers*.

All the men of the regiment should, however, be instructed in skirmish drill. Each captain selects from his company the four sergeants and forty-eight privates who are most active and best fitted for the service of skirmishers, and submits their names, through his chief of battalion, for the approbation of the colonel; the latter, having satisfied himself that they possess the qualities and knowledge necessary for skirmishers, appoints them as such in regimental orders; any vacancies are filled in the same manner.

OF THE INSTRUCTION AND FORMATION OF SKIRMISHERS.

It is necessary that a skirmisher should be active, quick, fully informed as to the object of his service, and a good marksman.

Although the skirmish drill itself augments the activity of the soldier, yet it is very useful to oblige the men to climb fences and hedges promptly and actively; to leap streams, ditches, &c., in addition to instructing them in running, as a preparation for the drill.

The soldier being accustomed to move and act in close order, it is necessary to impress upon him that, so soon as he finds himself in open order, he need no longer trouble himself about the step or alignment, but should execute every movement easily and lightly, turning his whole attention towards the enemy, thinking how to injure them most with the least inconvenience to himself, and availing himself of every feature of the ground for cover.

For this purpose, in the instruction of skirmishers, the officers should turn their attention to the advantages to be taken of the ground, and explain to the men the manner of availing themselves of it: for example, if they have hillocks in front of them, they may lie down or kneel behind them; when attacking in a forest, they should advance from tree to tree,

and, having thus arrived near the enemy, endeavor to inflict such injury upon him as to drive him from the place; in a retreat through a forest, they should cover themselves behind trees and bushes, thus defending the position and their comrades; they should also be instructed how to lie down in ditches, behind fences, hedges, &c., and how to use their weapons to advantage in all positions.

If the signal to lie down is given in broken and covered ground, the officers must see that the men take the greatest advantage of the locality.

The skirmishers must mutually support each other, concentrating their fire upon the points where they can do most damage to the enemy, as, *e.g.*, upon the officers, on masses of men, on the men and horses with the artillery, upon the points to be attacked, and in the defence, upon points where the enemy presents himself in close order, such as causeways, bridges, hollow ways, &c.

The skirmishers must be impressed with the conviction that the artillery of the enemy can do them no harm; that in forests, ravines, behind ditches, &c., cavalry cannot injure them; in exposed positions they always have their own cavalry or infantry in close order to protect them.

The men deployed as skirmishers must always be prepared to use the bayonet, especially against single horsemen.

Although it has been said above that skirmishers should move and act freely, they should never lose their soldierly bearing.

In skirmishing order the men are not permitted to converse; all noise, clamor, and even cheers, are strictly forbidden, unless special permission is given.

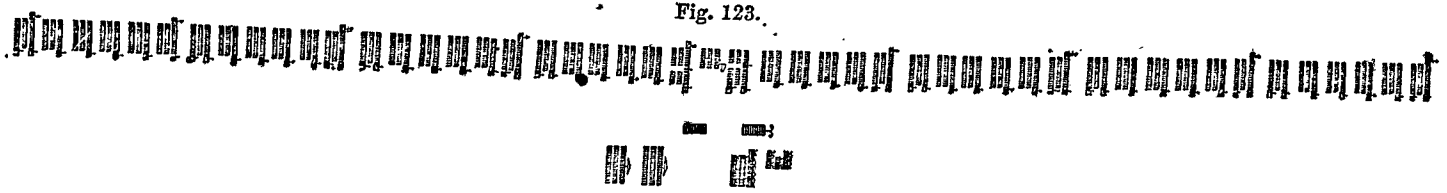
The movements of skirmishers are made either at the free step or the run.

The order of battle, as skirmishers, consists of a chain of skirmishers, with a reserve in rear. The chain consists of pairs of men at a certain interval apart; this interval will vary with circumstances, but should never be greater than 15 paces. The intervals need not be equal, for each pair must seek shelter; the different pairs may be as much as 10 paces in front or rear of the general line. In each pair, the rear-rank man is 2 paces to the right and 3 in rear of his front-rank man, whether moving or at a halt.

The duty of the chain is to weaken and harass the enemy by a well-aimed fire, and thus prepare the way for a successful attack by the troops in close order, or to cover their movements.

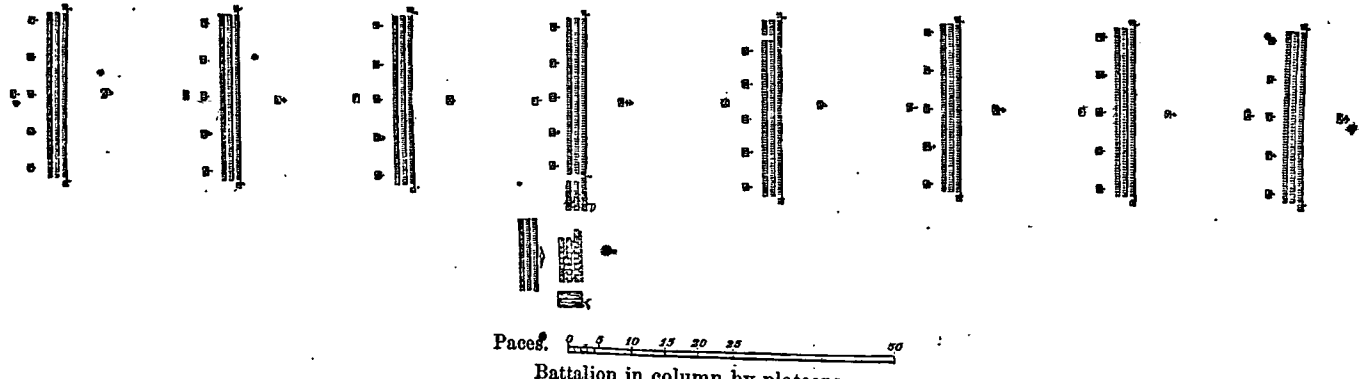
The reserve follows the movements of the chain at the distance of from 80 to 150 paces, availing itself of whatever cover the ground affords; it may be employed for protecting the flanks of the chain, or for turning those of the enemy.

Fig. 123.



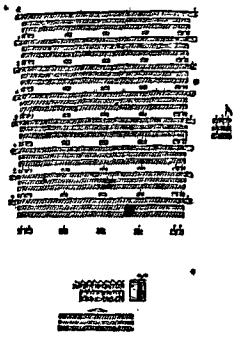
Battalion in column by sections.

Fig. 124.



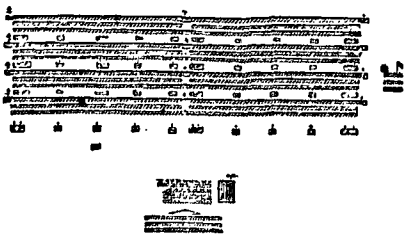
Battalion in column by platoons.

Fig. 125.



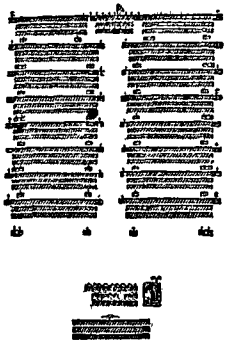
Close column by platoons.

Fig. 126.



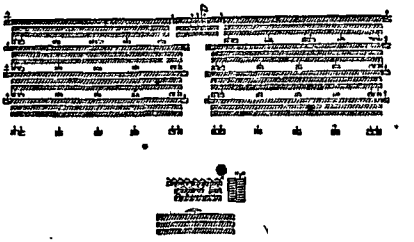
Close column by divisions.

Fig. 127.



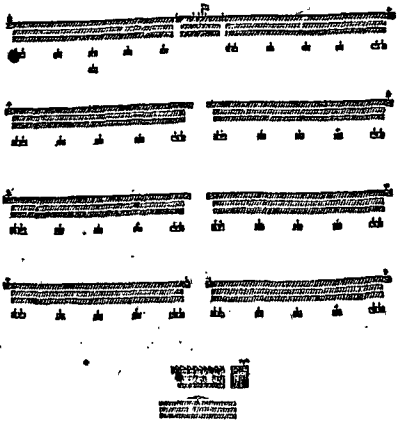
Double column on centre platoon.

Fig. 128.



Double column on centre division.

Fig. 129.



Column of attack.

(For scale, see p. 225.)

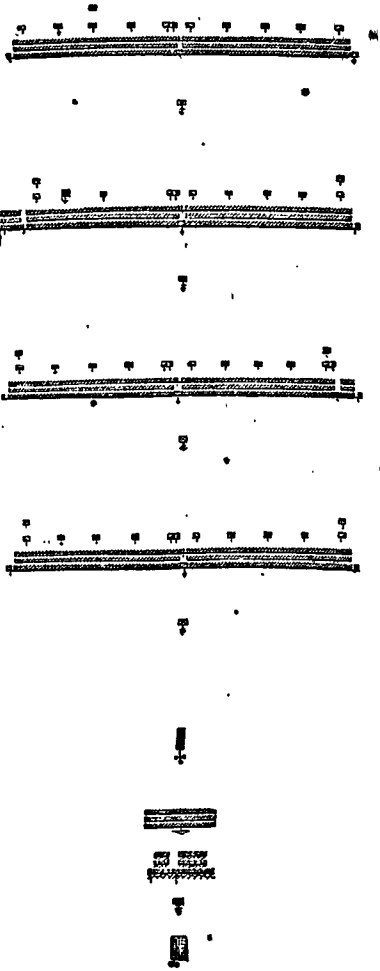
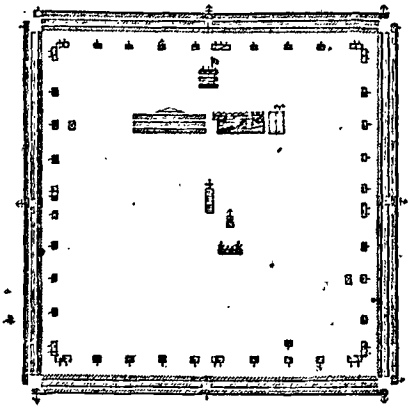


Fig. 130.

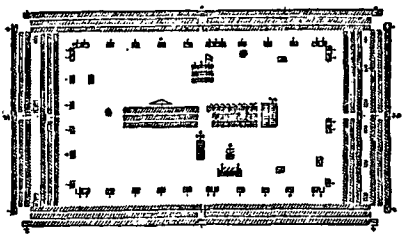
Column by divisions at half distance—to pass in review.

Fig. 131.



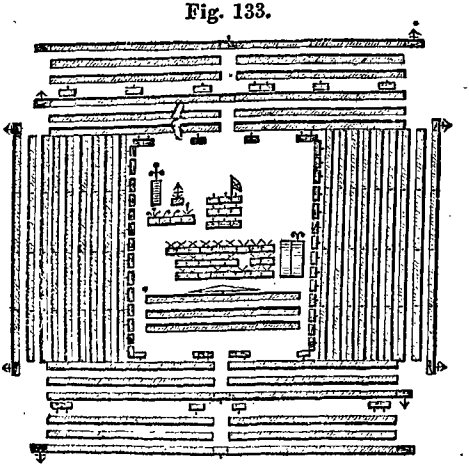
Square formed from deployed front.

Fig. 132.



Square formed from column of attack.

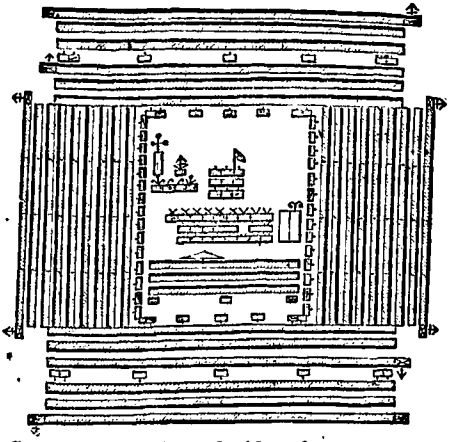
Fig. 133.



Square formed from close columns by platoons—right in front.

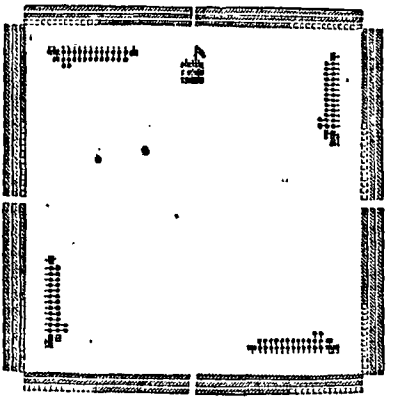
(For scale, see p. 227.)

Fig. 134.



Square formed from double column on centre platoon.

Fig. 135.



Formation of skirmishers in a square formed from deployed front.

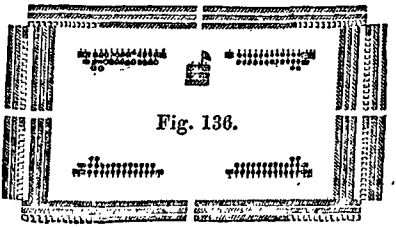


Fig. 136.

Formation of skirmishers in a square formed from column of attack.

(For scale, see p. 227.)

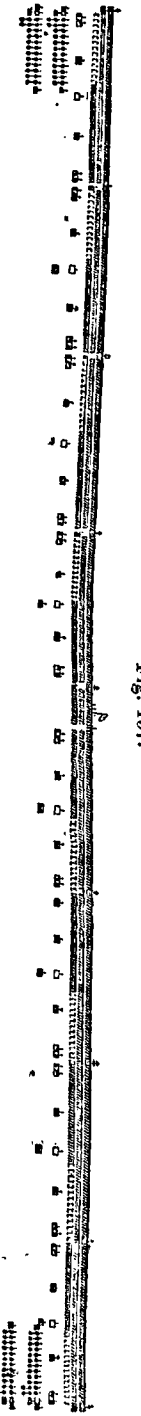
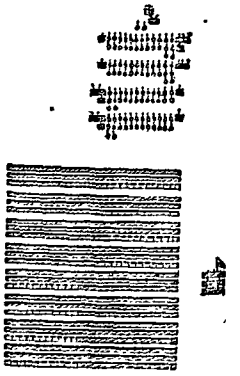


Fig. 137.

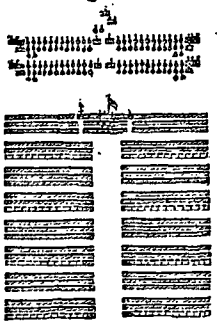
Formation of skirmishers when battalion is deployed.

Fig. 138.



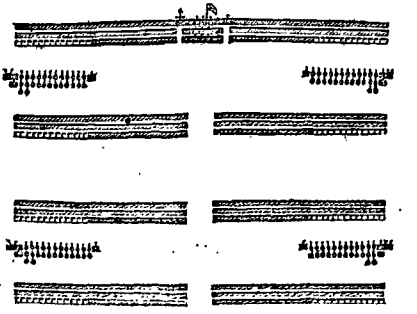
Formation of skirmishers in a close column by platoons.

Fig. 139.



Formation of skirmishers in a column doubled on the centre platoon.

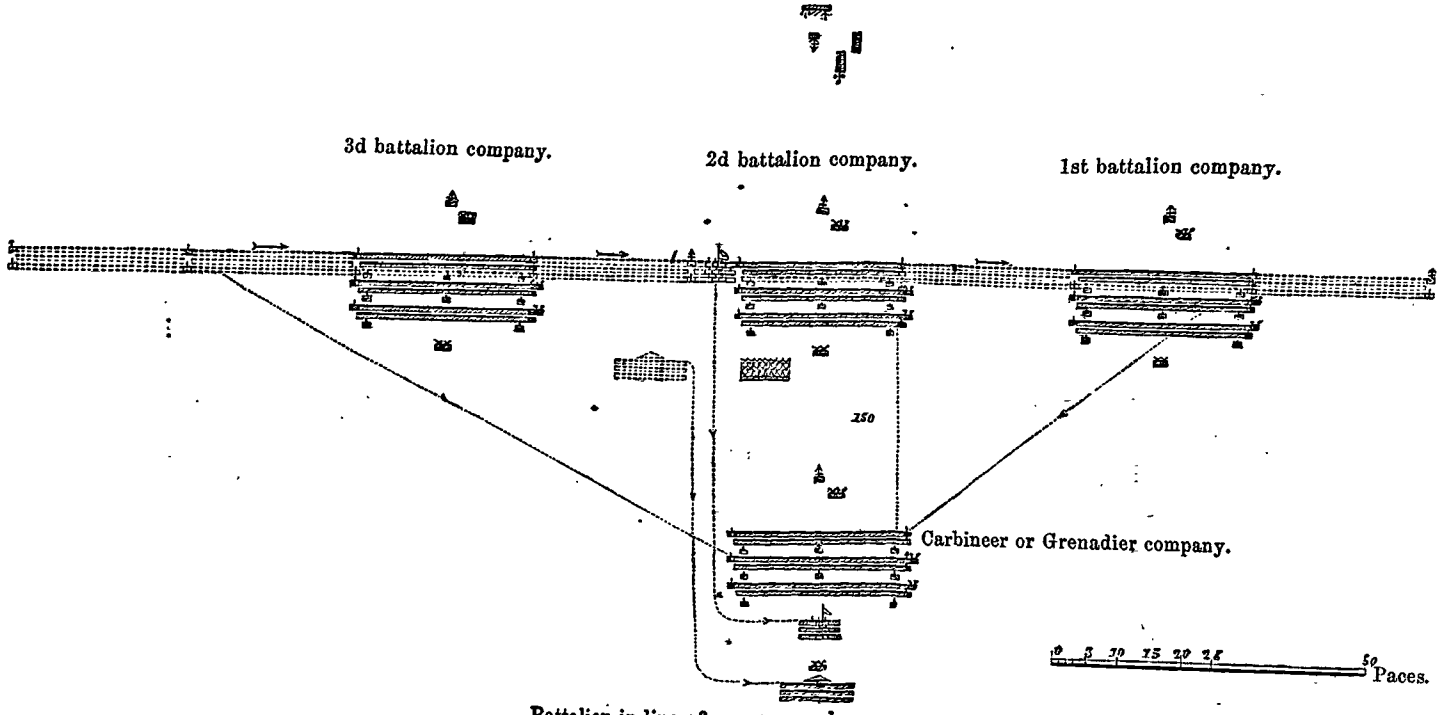
Fig. 140.



Formation of skirmishers in column of attack.

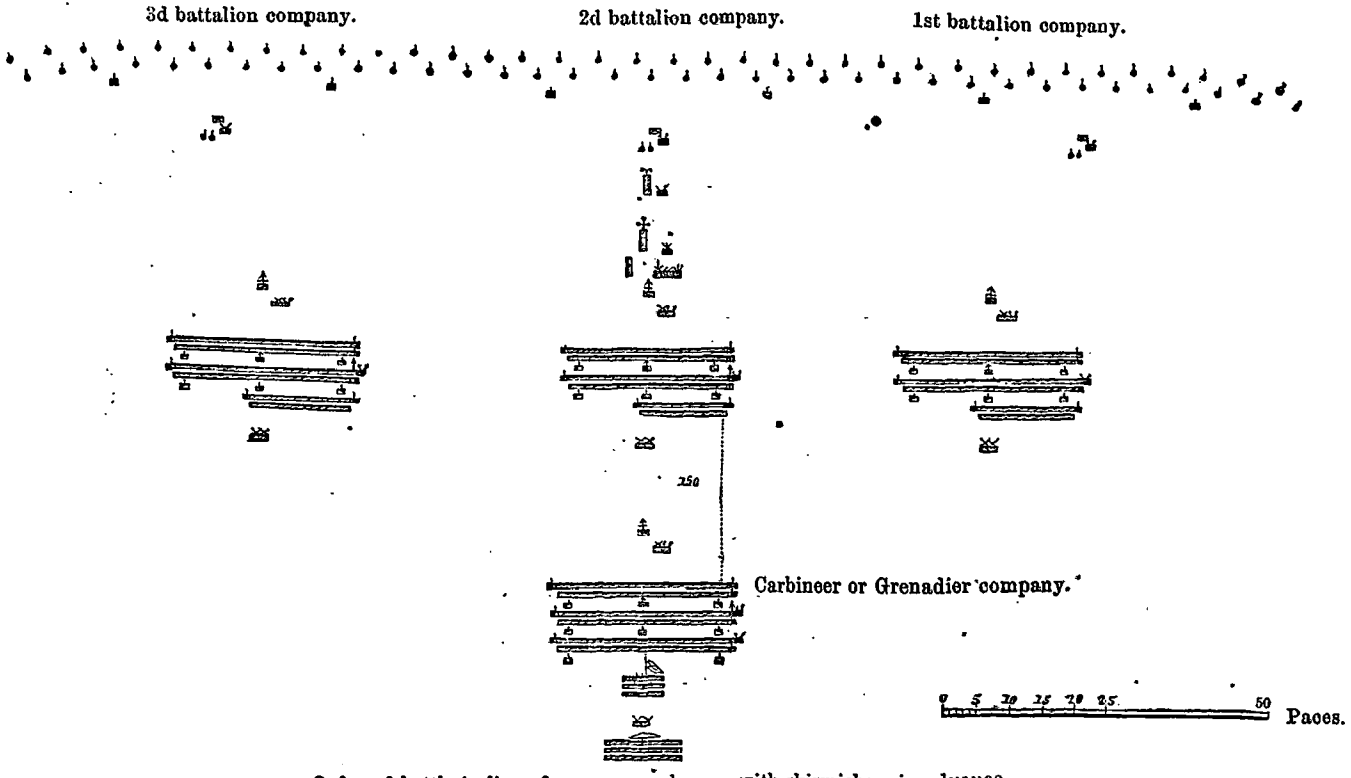
(For scale, see p. 231.)

Fig. 141.



Battalion in line of company columns.

Fig. 142.



Order of battle in line of company columns, with skirmishers in advance.

Commands to skirmishers are given by the voice as much as possible. In close order, the *active skirmishers* are posted in the rear rank, 12 in each platoon, and on either flank; these 24 men, when ordered out as skirmishers, first form a platoon in 2 ranks, of whom one-half are deployed, the rest forming the reserve.

The reserve skirmishers are also in the rear rank, 12 in each platoon.

Skirmishers rally in circles to resist cavalry.

A company may be formed either in square or circle for the same purpose. When the line in close order advances, the skirmishers frequently lie down, continue firing to the last moment, allow the line to pass over them, and then rise and take their places in the rear rank; the line thus meeting the enemy in 3 ranks.

SCHOOL OF THE BATTALION.

The formation of the battalion, the posts of the officers, sergeants, &c., have already been given.

In figs. 123, 124, are given the posts of the officers, sergeants, &c., in columns by platoons and by sections.

In figs. 125 to 129 are given the formation of the different close columns employed; in close column the distance between subdivisions is 4 paces, measured from front rank to front rank.

Columns are formed and deployed on the march as well as from a halt.

In figs. 131 to 134 are given different squares.

In fig. 130 is given the formation of a column by divisions, at half distance, for passing in review.

In figs. 135 to 140 are given examples of a deployed line, columns, and squares, with the skirmishers formed ready for action, if needed. The skirmishers sometimes move out directly through the captains' intervals.

Fig. 141. The battalion is sometimes formed in a line of columns of companies by platoons in two ranks, the grenadier company being held in reserve; this formation is employed when the battalion is to operate in obstructed localities, such as forests, &c., when many skirmishers are to be employed. Each company column consists of 3 platoons, each in 2 ranks; the 1st platoon is composed of the front and centre ranks of the 1st platoon of the company; the 2d platoon, of the same ranks of the 2d platoon; the 3d platoon, of the whole rear rank of the company.

Fig. 142 gives the order of battle of a battalion thus formed.

The square is moved in any direction without reducing it. When it is in retreat, the rear rank of the rear face occasionally halts, faces about, fires, and runs back to its place in the square.

EVOLUTIONS OF THE LINE.

Battalions may be formed in a deployed line, in line of columns, or in general column.

The interval between battalions in a deployed line is 20 paces.

A line of columns has either full or closed intervals.

Full intervals are those which permit the battalions to deploy, and have the prescribed interval of 20 paces when the deployment is made.

The closed intervals are 45 paces for battalions formed in double column on the centre platoon, and 20 paces for all other columns.

A general column is one in which the battalions follow each other, every battalion being formed in columns; these may be open or close; in the first case, the distance from one battalion to another is platoon distance, *plus* 20 paces; in the latter case, it is 8 paces.

In general column the distance between battalions is counted from the line of non-commissioned file-closers of the last subdivision of one battalion to the front rank of the next battalion.

Troops may be formed in one or several lines, and in one or two general columns. The distance between the lines, or columns, depends upon the ground and the judgment of the commander.

For instruction in evolutions of the line the troops are usually formed in 2 lines; the first, either deployed or in columns; the second, 200 paces in rear of the first, and usually in columns. The rules laid down in the cavalry tactics for the assignment of commanders to the lines apply here.

The generals of division are 80 paces in front of the division deployed; generals of brigade, 50 paces; colonels, 30 paces in front of the centre of their commands.

Figs. 143 to 147 give the positions of the commanders in various formations.

The column of attack is usually employed in the various movements of changing front, passing defiles, &c., &c.

ORDERS OF BATTLE AND OF RESERVE, AND GENERAL COLUMNS.

When troops are formed in order of battle, or in general column, the muskets and guns should be loaded.

An order of battle is an arrangement of troops which enables them to attack or defend themselves successfully.

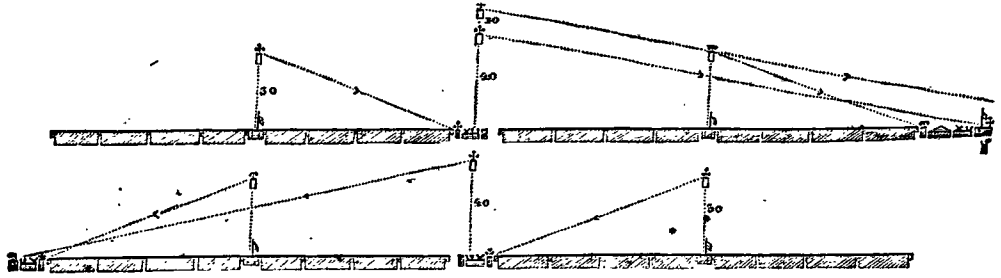
Infantry, with its artillery, may be formed in 4 orders of battle and 1 of reserve, (figs. 148 to 172.)

The orders of battle are named as follows:—

The first, or ordinary order of battle.

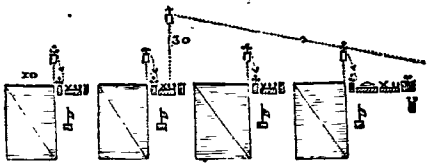
The second, or close order of battle.

Fig. 143.



Positions of commanders in a regiment of 4 battalions, deployed in two lines.

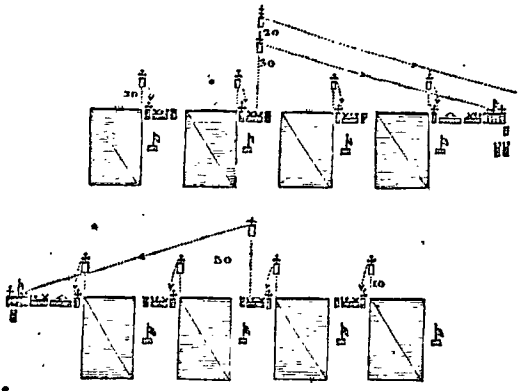
Fig. 144.



Positions of commanders in a regiment in line of columns, with close intervals.

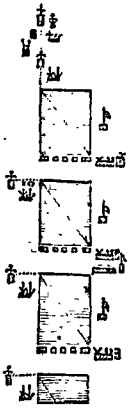
[For scale, see p. 236.]

Fig. 145.



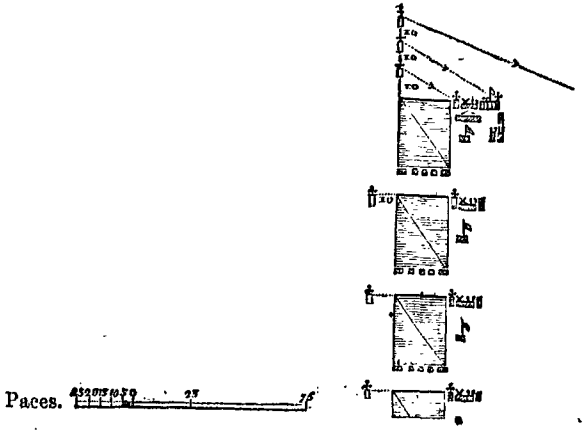
Positions of commanders in a brigade formed in two lines of columns, with close intervals.

Fig. 146.



Positions of commanders, &c., in a brigade formed in one general close column.

Fig. 147.



Regiment in general close column, with loaded arms.

The third, or extended order of battle.

The fourth, or reinforced order of battle.

Each order of battle usually consists of 2 lines of battle and a reserve.

The 1st and 2d orders of battle are peculiarly fundamental; the large number of troops held in reserve renders it possible, without changing the order of the lines of battle, to pass to any other formation which circumstances may render necessary.

The 3d order of battle is nothing but a modification, according to circumstances, of the 1st or 2d, in which a part, or even the whole, of the reserve, is employed to reinforce or extend the lines of battle.

The 4th order of battle is also a modification, according to circumstances, but with a different object, of the 1st or 2d. Here the lines of battle are drawn closer together, and one-half the reserve is employed to strengthen the 2d line of battle.

The employment of the different orders of battle will be more fully explained under the head of their adaptation to the ground.

General rules for the formation of the orders of battle from general column.—The orders of battle may be formed either with or without the employment of markers. The order of reserve is always formed with markers.

If the order of battle is formed under fire of the enemy, then the positions of the battalions and batteries of the 1st line cannot be occupied by the markers beforehand. In this case the general commanding first establishes on the new line 1 or 2 battalions, and a part of the artillery, in the desired direction, and then, under cover of skirmishers, places the rest of the troops in position. The batteries first thrown into position to cover the formation of the infantry must remain at their posts until the completion of the formation, although they are not opposite their intervals; they will move to their intervals by obliquing at a trot, when the line of battle first advances or retreats.

The orders of battle will always be formed by means of markers: *a*, when the troops are taking up a position for bivouac; *b*, when forming out of range of the enemy's fire; and, finally, *c*, when taking up a new position in rear of that first occupied, during movements in retreat.

In time of peace, troops will occasionally be exercised in the formations without employing markers.

In general columns each battalion should be formed in double column on the centre platoon, closed in mass; the batteries in columns by sections.

The distance between the parts of the column should be 20 paces. In general column the troops move with the free step.

The remarks upon general columns in the cavalry tactics mostly apply to general columns of infantry.

In the 1st, 2d, and 3d orders of battle, the distance between the two

lines of battle is 200 paces; in the 4th order of battle, it is 100 paces. The reserve is usually placed behind the centre of the lines of battle, and in one or two lines 60 paces apart; in the 1st, 2d, and 3d orders, the reserve is 400 paces from the 2d line of battle; in the 4th order, 300 paces. The distances between lines are estimated from the front rank of the leading platoon of one line to the same point of the other line.

The general rule is that the junior regiments and brigades form the 1st line; circumstances may justify a departure from this rule.

If there are any heavy batteries present, at least one should always be in the 1st line, so as to commence firing upon the enemy at the greatest possible distance.

The formation of orders of battle near, or under the fire of, the enemy, should always be effected under cover of a line of skirmishers.

Figs. 148 to 165 give the orders of battle and reserve for brigades and divisions composed of regiments of four battalions. In this case each regiment forms in two lines; the regiment on the right flank has its junior battalions in front; that on the left flank its senior battalions in front. The exceptions to this rule are found in the fourth order, where the regiment composing the centre of the second line is formed in one line, and in the reserves of the third and fourth orders, where the regiment in reserve is also formed in one line.

Figs. 161 to 165 show the formation of four-battalion regiments in general column.

Figs. 166 to 168 give the order of reserve and the first and second orders of battle for a division composed of regiments having three battalions.

Figs. 169 to 172 give the same things for a brigade of three-battalion regiments.

APPLICATION OF THE ORDERS OF BATTLE TO THE GROUND.

The orders of battle and of reserve, heretofore explained, should suffice as a basis for all formations of infantry and its artillery. In every isolated regiment, brigade, or division, its commander determines upon the formation most suitable to the ground and the purpose in view.

The *order of reserve* is employed for troops in bivouac, out of action, or in reserve. In this order the troops are arranged with the smallest possible distances and intervals, in order to cover them, until coming into action, behind accidents of the ground, from the view and fire of the enemy; but all the parts are so arranged that any order of battle or general column can readily be formed, and any portion be detached without disturbing the general arrangement.

The *first order of battle* may be used with equal advantage in attack

Fig. 148.

Fig. 149.

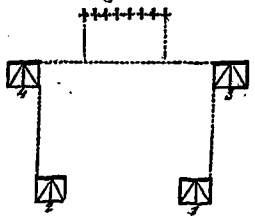


Fig. 150.

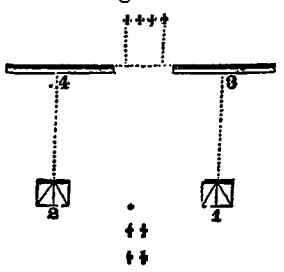


Fig. 151.

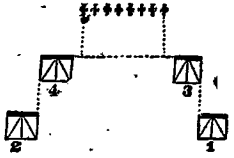


Fig. 152.

Fig. 153.

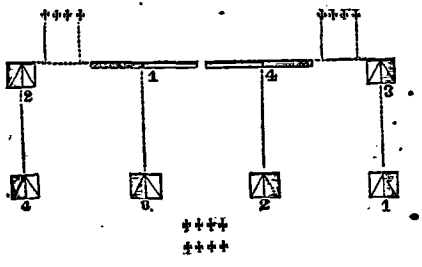


Fig. 154.

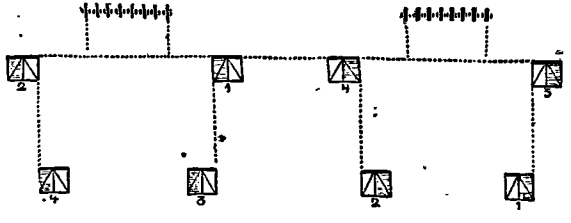


Fig. 148. Order of reserve for a regiment having 4 battalions.
Fig. 149. 2d order of battle for a regiment having 4 battalions.
Fig. 150. 1st order of battle for a regiment having 4 battalions.
Fig. 151. 4th order of battle for a regiment having 4 battalions.
Fig. 152. Order of reserve for a brigade composed of regiments having 4 battalions.
Fig. 153. 1st order of battle for a brigade composed of regiments having 4 battalions.
Fig. 154. 2d order of battle for a brigade composed of regiments having 4 battalions.

(For scale, see p. 241.)

Fig. 155.

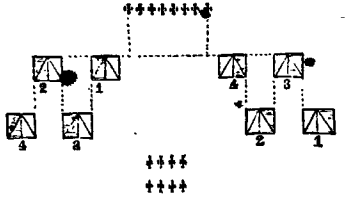


Fig. 156.

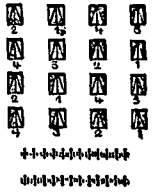


Fig. 155. 4th order of battle for a brigade composed of regiments having 4 battalions.
Fig. 156. Order of reserve for a division composed of regiments having 4 battalions.
Fig. 157. 1st order of battle for a division composed of regiments having 4 battalions.
Fig. 158. 2d order of battle for a division composed of regiments having 4 battalions.

Fig. 157.

2d light battery. Heavy battery.

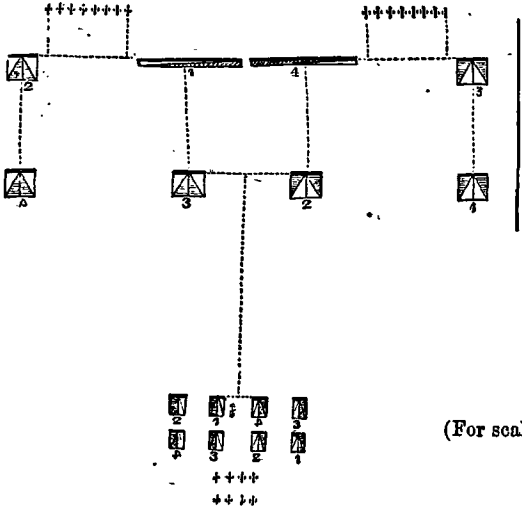
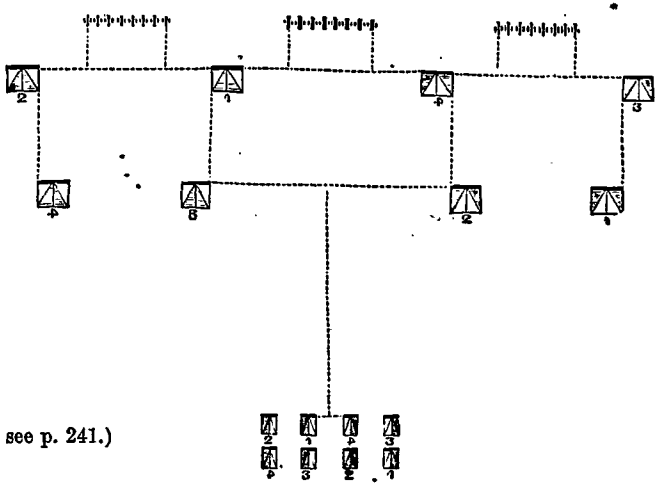


Fig. 158.

2d light battery. Heavy battery. 1st light battery.



(For scale, see p. 241.)

Fig. 159.

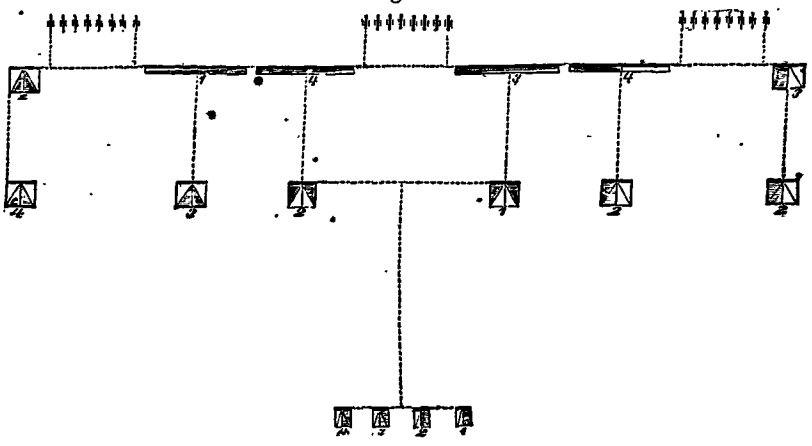


Fig. 160.

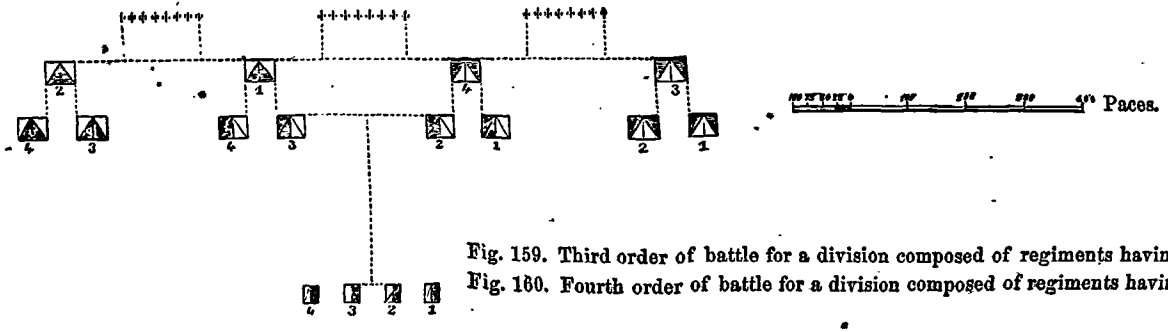


Fig. 159. Third order of battle for a division composed of regiments having four battalions.
Fig. 160. Fourth order of battle for a division composed of regiments having four battalions.

Fig. 161.

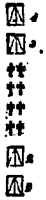


Fig. 162.

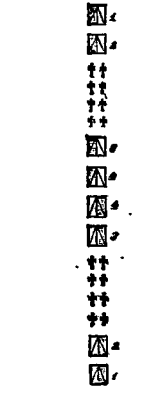


Fig. 163.

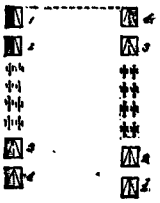


Fig. 164.

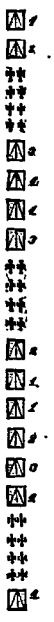


Fig. 165.

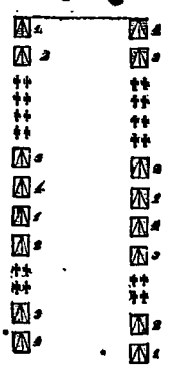


Fig. 161. A regiment of four battalions, in one general column.

Fig. 162.
Fig. 163.
Fig. 164.
Fig. 165.
} Composed of regiments having four battalions.

Fig. 166.

Fig. 167.

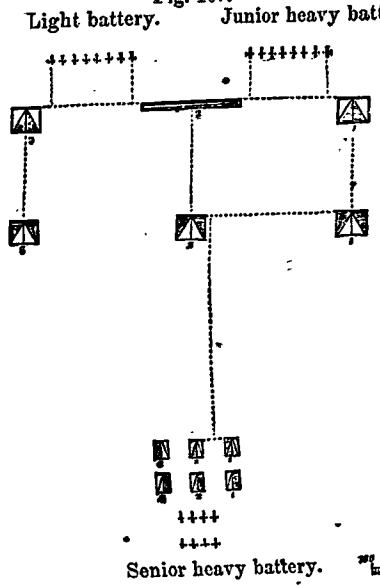


Fig. 168.

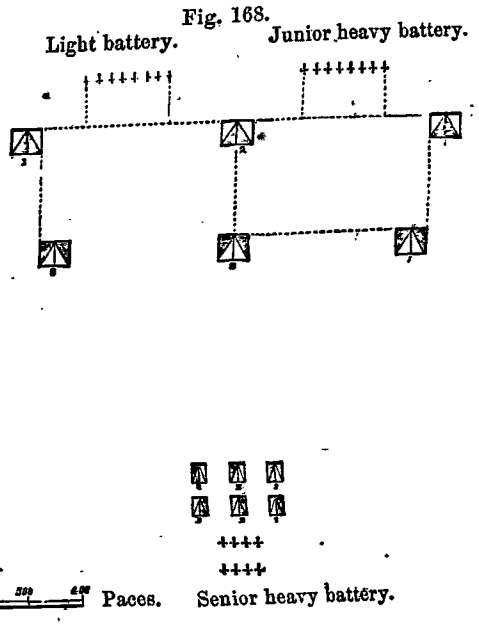


Fig. 166. Order of reserve for a division composed of regiments having 3 battalions.
Fig. 167. 1st order of battle for a division composed of regiments having 3 battalions.
Fig. 168. 2d order of battle for a division composed of regiments having 3 battalions.

Fig 169.

Fig. 170.

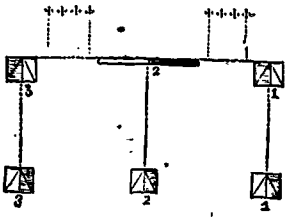


Fig. 171.

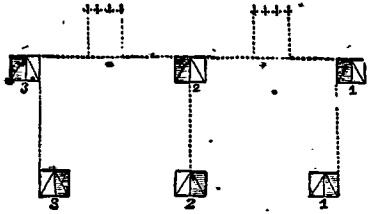
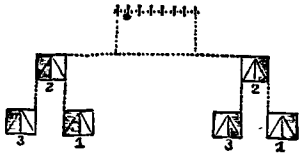


Fig. 172.



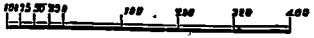


Fig. 169. Order of reserve for a brigade composed of regiments having 3 battalions.
Fig. 170. 1st order of battle for a brigade composed of regiments having 3 battalions.
Fig. 171. 2d order of battle for a brigade composed of regiments having 3 battalions.
Fig. 172. 4th order of battle for a brigade composed of regiments having 3 battalions.

and defence; it is employed, in preference, on open ground, or where the enemy can be most injured by the fire of deployed battalions.

The *second order of battle* is of the same nature as the first, but it can be employed on all kinds of ground, on account of the facility with which the intervals between the battalions of the first line can be increased or diminished. It is most frequently used in actual combat, particularly where the ground does not present open plains, and where the troops should occupy a greater space than in the first order.

The *third order of battle* is proper only for defence, on account of the great extent of the lines of battle, and the insignificance, or sometimes total absence, of a reserve. As a general rule, the use of the third order is admissible only in cases where it is possible to support it by strong reserves drawn from other troops, or where an extensive position is to be occupied, for the defence of which a weak line is sufficient.

The *fourth order of battle* may be employed for an obstinate defence, or, particularly, for a vigorous and decisive attack upon the enemy with both lines of battle, which may in this case be regarded as one line, on account of their short distance apart.

In all the orders of battle the 1st line of battle may be: (*a*) deployed, for defensive purposes, if the ground in front is favorable for the action of firearms in close order; (*b*) in columns doubled on the centre, either for attack or defence, if the ground in front permits the use of firearms only in open order.

The 2d line of battle should always be formed in columns doubled on the centre, since its destination is rather to serve as a support, reinforcement, or relief to the first line, than to engage in the combat.

The reserve is always formed in columns doubled on the centre platoon, until brought into action.

The lines of battle and the reserve may be formed in squares, to resist cavalry. (Figs. 173 to 181.)

Since the exact formation of the orders of battle, according to the tactics, is possible only in open and unobstructed countries, the generals are permitted to make such partial changes as circumstances may require.

The skirmishers in front of the 1st line may be thrown far out, or drawn close in, but should be so placed as to be covered by the accidents of the ground from the fire of the enemy, and yet be able to injure him by their own fire.

Those parts of the chain that are under cover should be thick, the exposed portions should be thin.

The batteries serving in front of the 1st line should be posted at points which command the ground, and from which the whole space in front may be swept; if such points are too far from the general position of the battery, they are occupied by detachments.

Fig. 173.

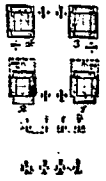


Fig. 174.

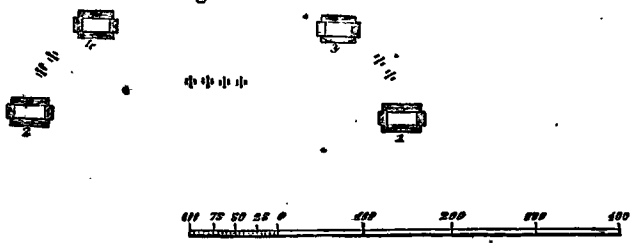


Fig. 175.

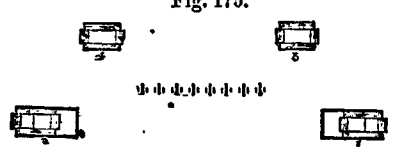


Fig. 176.

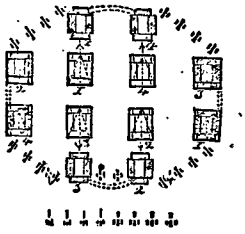


Fig. 177.

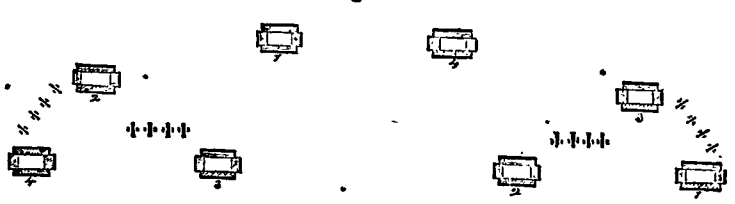
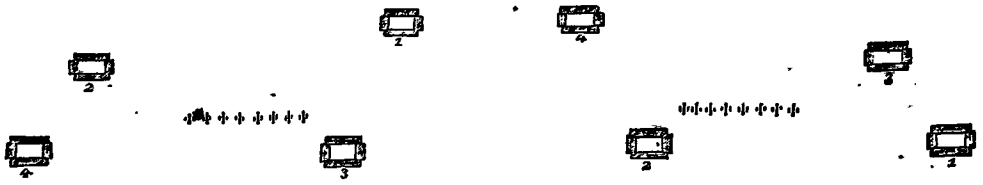


Fig. 173. A regiment of 4 battalions, in order of reserve, formed into squares.
Fig. 174. A regiment of 4 battalions, in first order of battle, formed into squares.
Fig. 175. A regiment of 4 battalions, in fourth order of battle, formed into squares.
Fig. 176. A brigade of 4-battalion regiments, in order of reserve, formed into squares.
Fig. 177. A brigade of 4-battalion regiments, in first order of battle, formed into squares.

Fig. 178.



(For scale see fig. 175.)

Fig. 179.

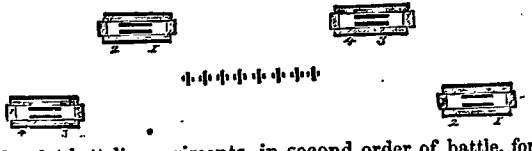


Fig. 178. A brigade of 4-battalion regiments, in second order of battle, formed into squares.
Fig. 179. A brigade of 4-battalion regiments, in fourth order of battle, formed into squares.

Fig. 180.

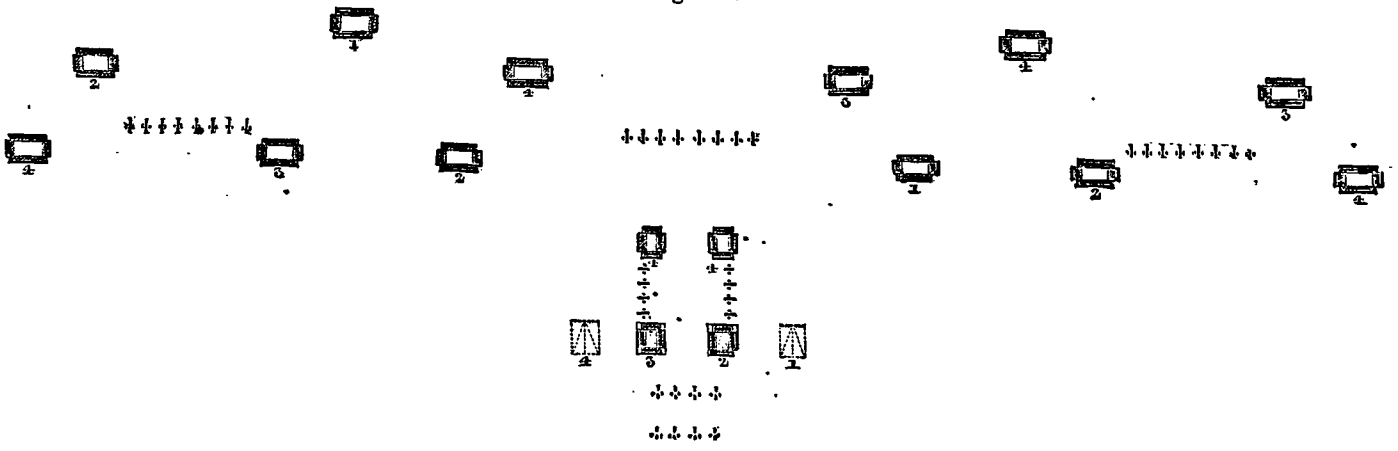


Fig. 181.

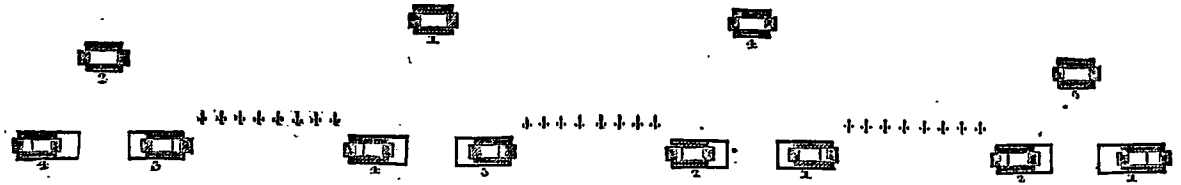


Fig. 180. A division of 4-battalion regiments, in first order of battle, formed into squares.
Fig. 181. A division of 4-battalion regiments, in fourth order of battle, formed into squares.

It follows from this that all the batteries need not be on the same line. The number of guns serving with the 1st line may be increased or diminished according to circumstances.

In the 1st line several battalions may be thrown forward, or moved to one side, to secure a more advantageous position; if one of the batteries of the 1st line moves to the right or left, on account of the ground or other circumstances, the battalion which happens to be in rear of it doubles the part screened by the battery, or forms into column; if necessary, the general of brigade moves it to one side, provided the ground and the formation of the other troops permit. If the battery moves the distance of a whole battalion front, the battalion may give up its place, and occupy a new position in rear of that first held by the battery.

For these reasons, the intervals between the battalions are not always equal, nor is the line of battle necessarily straight. In open country, especially against an enemy superior in cavalry, the extreme battalions of the 2d line may be placed behind the outer flank battalions of the 1st line; the formation of the battalions of the 1st line may also be changed in conformity with circumstances and the ground, but without changing the general order of battle; for this purpose some of the battalions of the 1st line may be formed in line of company columns, for more convenient action as skirmishers. The distance between the two lines of battle, as well as that between the 2d line and the reserve, may be increased or diminished, so as to be able to cover the troops from the view and fire of the enemy, by means of the accidents of the ground.

The reserve may be placed in rear of those points which, on account of their weakness, or being the key of the position, ought to be reinforced at once if vigorously attacked by the enemy; during an attack the reserves follow in rear of the troops who are to attempt the key of the enemy's position; such dispositions of the reserve should be carefully concealed from the enemy.

If it is impossible, in such cases, to conceal the reserve behind accidents of the ground, it is best to post it behind the centre of the lines of battle.

EXAMPLES OF THE APPLICATION OF THE ORDERS OF BATTLE TO THE GROUND.

(Fig. 182.) Application of the 1st order of battle, by a division composed of regiments having four battalions.

It is supposed that the enemy occupies the position A B.

One division is to form in the 1st order of battle, on the position C D.

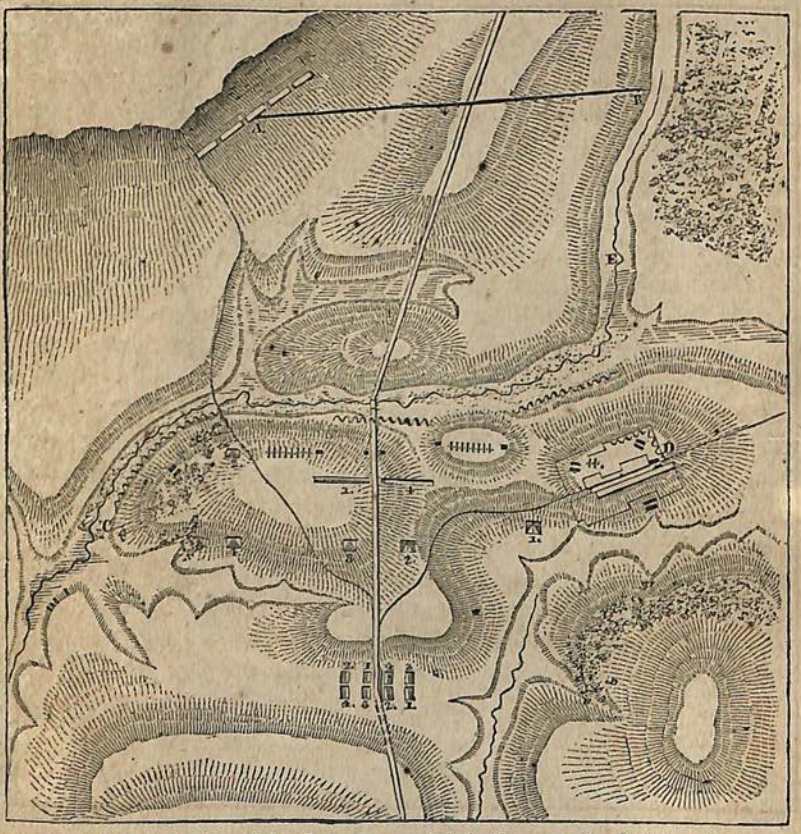
The nature of the ground requires the following changes in the order of battle:

Three companies of the battalion on the right flank of the 1st line

occupy the village D, the fourth company remaining in reserve behind the village.

Two pieces of the 1st light battery are also in this village, and enfilade the ravine B E. The battalion on the left flank of the 1st line approaches the woods C; one company is detached to hold the woods. The battalion

Fig. 182.



Application of the 1st order of battle to the ground, in the case of a division of regiments having 4 battalions.

on the right flank of the second line approaches the village D, to support the battalion which holds it, should the enemy attack it.

The reserve is posted on both sides of the main road, 500 paces from the 2d line. The remaining six pieces of the 1st light battery are with the reserve, on the road, in column by sections.

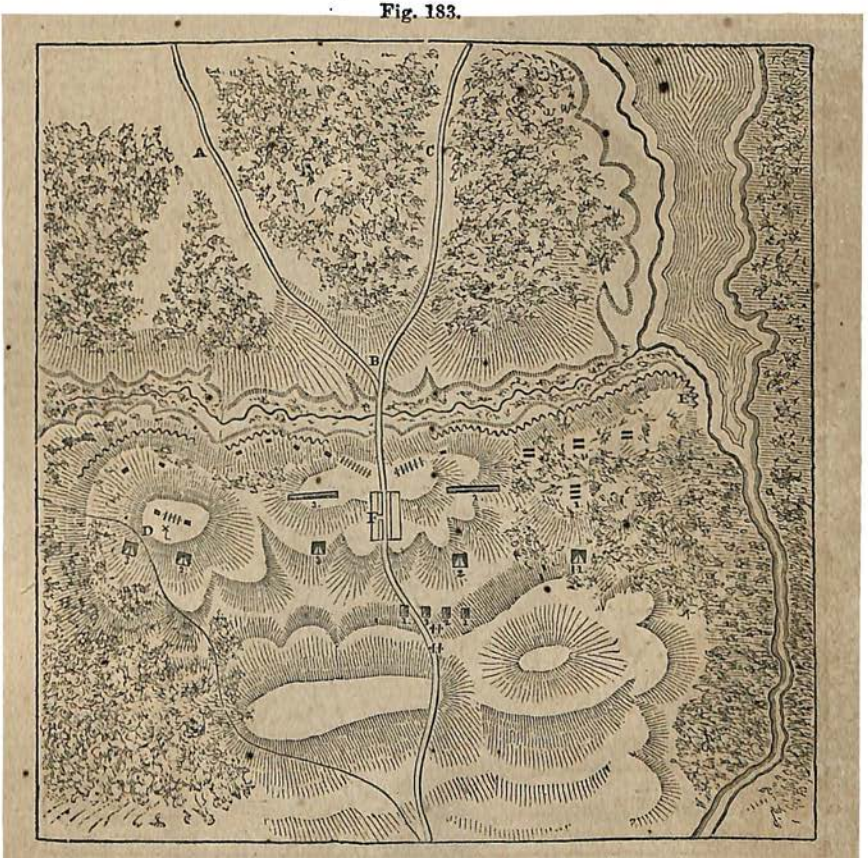
(Fig. 183.) Application of the 1st order of battle, by a division composed of regiments having three battalions.

It is supposed that the enemy is advancing in two columns, by the roads A B and C B.

One division, in the first order of battle, is to occupy the position D E. In conformity with the ground, the following modifications are made in the order of battle:

The 2d heavy battery and the light battery form one general battery, and are posted on the height in front of the village F.

Fig. 183.



Application of the 1st order of battle to the ground, in the case of a division of regiments having 3 battalions.

The light battery enfilades the road B.C; two guns of the heavy battery sweep the bridge; the remaining pieces of the heavy battery enfilade the road A B.

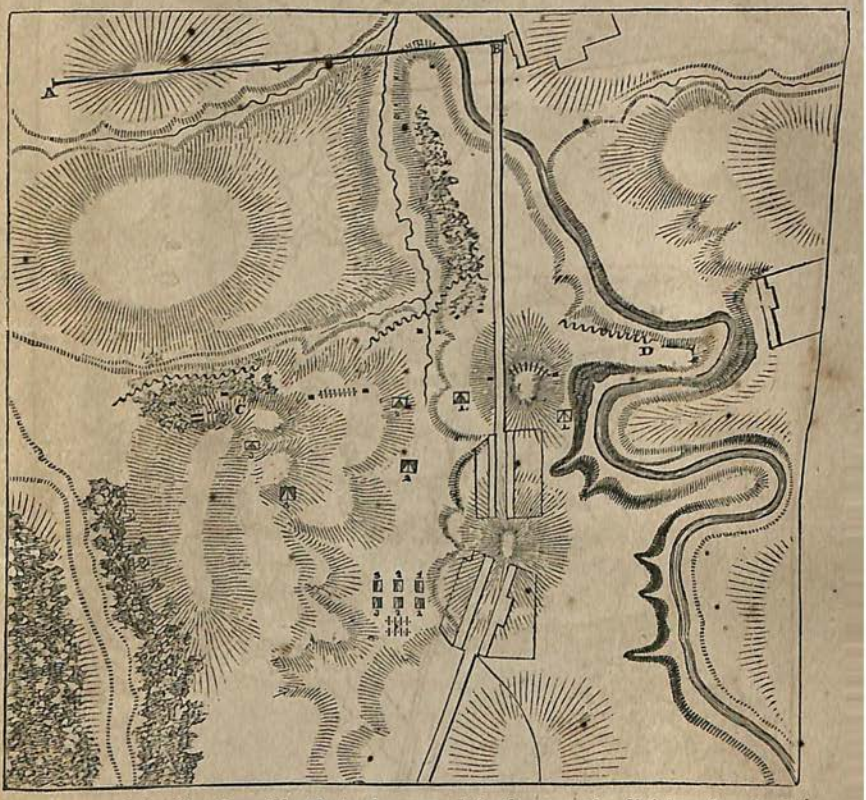
The woods on the right flank of the position are occupied by one battalion of the 4th regiment, formed in company columns.

To strengthen the left flank of the position, and defend the ford, there are placed in front of the windmill D four guns of the 1st heavy battery, and on the slope of the hill two battalions of the 2d regiment, in columns of attack; the remaining battalion of this regiment, and all the battalions

of the 1st regiment, compose the reserve, which is posted, in a hollow, 200 paces behind the village F; the remaining half battery of the 1st heavy battery is posted in rear of the 1st regiment, in column by sections.

(Fig. 184.) Application of the 2d order of battle, by a division composed of regiments having three battalions.

Fig. 184.



Application of the 2d order of battle to the ground, in the case of a division of regiments having 3 battalions,

The enemy occupies the position A B.

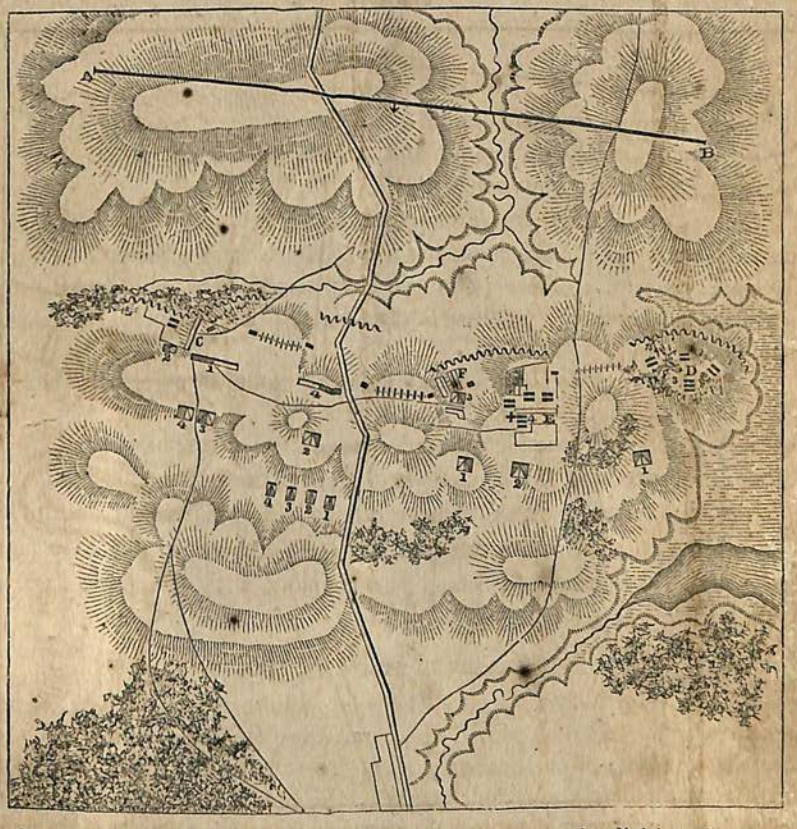
One division, in the 2d order of battle, is to occupy the position C D. The nature of the locality requires the following modifications in the normal order of battle.

The 2d heavy battery is posted on the hill to the right of the main road. All three battalions of the 4th regiment are on the left of the road, the 3d battalion being thrown back a little to withdraw it from the fire of the enemy's artillery; one company of this battalion, formed in company column, holds the wood C. The 1st battalion of the 3d regiment is on the right of the road, behind the right flank of the 2d heavy battery.

The reserve is posted in a hollow, in rear of the left flank of the lines of battle, in order to be able to reinforce this flank should it be attacked.

(Fig. 185.) Example of the application of the 3d order of battle, by a division composed of regiments having 4 battalions.

Fig. 185.



Application of the 3d order of battle to the ground, in the case of a division of regiments having 4 battalions.

It is supposed that the enemy occupies the position A B. One division, in the 3d order of battle, is to hold the position C F D.

The nature of the ground renders it necessary to make the following changes in the order of battle:

The lines of battle consist of the 1st, 2d, and 3d regiments, the latter on the right. The 3d battalion of the 3d regiment, formed in company column, occupies the wood D; the 4th battalion of the same regiment, formed in the same manner, holds the village E; the 3d battalion of the 1st regiment, in column of attack, is behind the building F.

The 2d battalion of the 2d regiment is behind the gardens of the village C; one company of this battalion occupies the gardens. The 2d light battery is posted down the hill-slope, between the 1st and 2d regiments.

The 3d and 4th battalions of the 2d regiment are behind its 1st battalion. The 4th regiment composes the reserve, and is posted in a hollow in rear of the 2d battalion of the 1st regiment.

Extracts from the regulations for the field service of infantry in time of peace.

In time of peace, troops usually march by regiments, and in rare cases, for short distances, by brigades or divisions.

The regiments seldom march entire, but generally by battalion, or by company, for greater convenience.

Billeters are parties sent forward at the beginning of the day's march to secure quarters for the command; they consist of 1 sergeant and 4 men per company, and 1 officer per regiment; also, for the regimental staff, a sergeant, 1 musician, 1 soldier of the train, 1 mechanic, and 1 hospital attendant.

The billeters of an isolated battalion are under an officer, and have a party for the battalion staff.

The billeters of a brigade are under its senior quartermaster.

The sergeants have the company guidons. (See cut, p. 293.)

When circumstances make it necessary to bake bread in advance of the troops, two parties of bakers are sent forward for the purpose; each party consists of 1 sergeant and 8 men per company, with one officer for each regiment, or separate battalion.

PREPARATIONS FOR THE MARCH.

About an hour before starting, the *general* is beaten, as a signal to prepare to march. At this signal the men dress, and, if so directed, tuck inwards the skirts of the overcoats as high as the knees, and, if it is rainy weather, or muddy, tuck their pants in the boot-tops; they then put on their accoutrements, the wagons are packed, and every thing is made ready for starting.

When the *assembly* is beaten, the men put on their knapsacks, fall in at the various rendezvous, and the troops are then formed on the markers in the prescribed order.

The wagons are formed on the left flank of the troops, or in their rear, according to the ground. With each money-wagon 1 sergeant and 2 men are detailed as a guard; the sergeant in front, and the men behind the wagon.

Prayers are recited before leaving the general rendezvous.

On the march, the following arrangements are made for the advanced and rear guards:

Order of march of a regiment of infantry.

Fig. 186.

(*a*) For a company, they are at 100 paces from it, and consist, each, of 1 sergeant, 1 corporal, and 6 men.

Parties less than a company, but having more than 6 files, send out advanced and rear guards of 1 corporal and 2 men, to the distance of 50 paces.

(*b*) For a battalion, they are at 150 paces, and consist respectively of a half platoon, commanded by an officer, and have a drummer.

(*c*) For a regiment, at 200 paces, and consist of a platoon each. The grenadier, rifle, and 5th platoons are not detailed on this duty.

(*d*) For a brigade, at 300 paces, and consist of a company each. The grenadier and color companies are not liable to this detail.

(*e*) For a division, at 400 paces, and consist of a battalion each.

These guards are sent out from the main body as soon as it has left the town or camp where it passed the night. As soon as they have reached their positions, the commanders of the advanced and rear guards command—

PATROLS TO THE FRONT.

Upon this,—

(*a*) In the case of a company, the corporal, with 2 men behind him, places himself 25 paces in front of the advanced guard; the remaining 4 men form in 2 ranks, with the sergeant in front. In the rear guard, the corporal and 2 men fall back 25 paces.

(*b*) In the case of a battalion, in the advanced guard 1 sergeant and the 2 flank files are detached as patrollers; the sergeant conducts the 2 front-rank men 50 paces to the front; the centre-rank men place themselves on the sides of the road, 6 paces in front of the half platoon; the rear-rank men, 6 paces in rear of it, also on the sides of the road. In the rear guard, the sergeant falls back 50 paces, with the rear-rank men of the flank files; the centre-rank men fall back 6 paces, and place themselves on the sides of the road; the front-rank men advance 6 paces.

If the advanced and rear guards are formed by sections, then the patrollers place themselves opposite the flanks of the leading and rear sections.

(*c*) Fig. 186. From the advanced and rear guards of a regiment, brigade, or division, patrollers are detached, as in the case of a battalion.

As soon as the advanced and rear guards have quitted the main body to take their posts, the parties of the day are posted; in these, the officers do not draw sabres; their posts are as follows:

(*a*) In a company marching by itself, at 4 paces in rear of it comes the sergeant of the day, and 2 paces behind him are the 4 privates of the day, in one rank, having a drummer of the day on their right. There is another drummer of the day at the head of the company.

(*b*) In a battalion marching by itself, the battalion officer of the day is

4 paces in rear of the battalion; 2 paces behind him are the 4 sergeants of the day, (1 for each company,) in one rank, with a drummer of the day on their right; 2 paces in rear of the sergeants are the 16 privates of the day, (4 for each company,) in four ranks, in the order of their companies. There is a drummer of the day at the head of the battalion, and another on the right of the color-guard.

(*c*) In the march of a regiment, (Fig. 186,) the parties of the day are posted in each battalion as just explained; the regimental officer of the day marches 4 paces in rear of the ambulances following the regiment.

(*d*) In the march of a brigade or division, the brigade or division officer of the day follows the officer of the day of the last regiment.

In a division there is no brigade officer of the day.

The brigade or division officers of the day are field officers.

When the guards and the parties of the day have moved to their posts, the commander of the main body commands,—

1. *Unfix bayonets.* 2. *Put on lock-covers.*

At these commands, the officers return sabres; all the sergeants and men unfix bayonets and put on their lock-covers; the colors are covered.

If the overcoats are not already tucked up, it is now done, and in warm weather the corners of the skirts are thrown back; if it is wet, the pants are tucked in the boot-tops.

In the advanced and rear guards, and the escorts of the money-wagons, the officers do not return sabres, nor do the men unfix bayonets or put on lock-covers; but they tuck up the overcoats, and arrange the pants at the same time with the main body.

When the preparations are completed, the different parts of the main column close up and fill the places left vacant by the guards and the parties of the day.

When the troops are ready to move, the commander directs the drummers of the day to beat the field march, on which the troops start at the route step, and in the order prescribed; in the main body, arms are carried at will, but in the advanced and rear guards at a slope or on the right shoulder.

In time of peace, the troops usually march by sections, right in front; in the winter, through deep snow, they may march by the flank.

If there are with the regiment recruits, supernumeraries, or weak men, they march, under an officer, behind the last battalion, having the party of the day in rear of them.

The wagon-train is arranged as in the cavalry regulations.

In the march of a battalion of sappers, the engineer-wagons are at the head of the other wagons.

RULES TO BE OBSERVED ON THE MARCH.

The officers and sergeants on the directing flank must preserve the distances between the subdivisions of the column; the men of the front rank must not be in advance of the guides.

The ranks will march at from 1½ to 2 paces apart.

The men may march freely in ranks, but must not quit their places, nor straggle.

On the march, the distances will be: between battalions, 50 paces; between regiments, 75; between brigades, 100 paces.

On good roads the march should not be slower than 2⅔ miles per hour.

One-half of the road must be left clear for persons passing by.

When passing over wooden or pontoon bridges, the cadenced step will never be used.

Before crossing rivers, the drums beat "the crossing."

In warm weather the men unhook their collars, take off their stocks, and raise the chin-straps over the visors.

The officers must always march at their posts, and never collect at the head or on the flanks of the column; in bad weather they may throw their cloaks over their shoulders, but they must never replace the helmet by the forage cap.

On the march, the commanders of subdivisions must see that the men quit their places under no pretext, and that they do not feign fatigue. Some privates are sent with sick or tired men, and turn them over to the battalion officer of the day, and return to their posts. The battalion officer of the day then sends them, under charge of some of the privates of the day, to the surgeon of the day with the ambulances; these privates of the day remain in rear until the first halt, or the end of the march, if there is no halt.

It is the duty of the advanced guard to inform the commander of all obstacles encountered, and to take the proper measures for their removal.

The rear guard take up all stragglers, and at the first halt, or at the end of the march, turn them over to the regimental officer of the day.

That the men may rest, and set themselves to rights, a halt of 1 or 2 hours' duration is made about midway in the march.

If the march is long and difficult, two or more halts may be made.

The places for halts must be dry, near water, and, in warm weather, in the shade of trees. Halts should not be made in villages, but near them.

Having halted, arms are stacked, without fixing bayonets; the men take off their knapsacks and belts, remove their helmets, and put on their

forage caps; the drums are piled, and the colors leaned against them, (figs. 187, 188.)

The parties of the day take off their knapsacks only; in each company, one of their number is posted over the stacks.

During the halt, the patrols and sentinels are relieved every 15 minutes.

When several regiments are marching together, the colonels, at the end of a halt, give the order to take knapsacks, &c., in succession, so as not to disturb the men prematurely, but give them more time to rest.

Fig. 187.

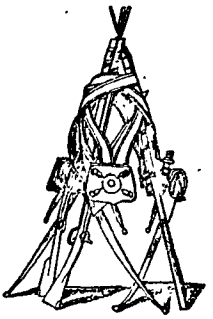
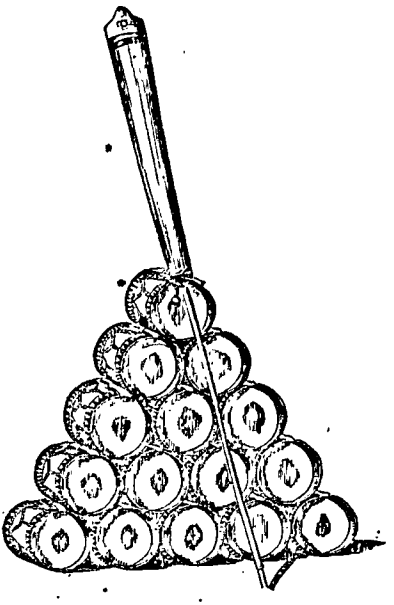


Fig. 188.

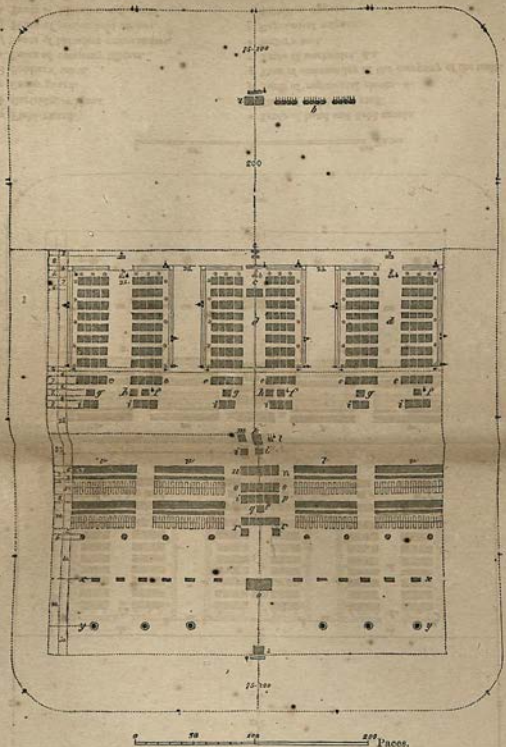


In addition to the main halt, short halts, of about 15 minutes' duration, are made soon after the beginning of the march, and at 3 or 4 miles after the main halt, to allow the men to put themselves to rights and satisfy the calls of nature. During these halts the men remain in the road, in the order of march, stack arms, and take off their knapsacks.

It is a general rule to omit no opportunity of endeavoring to preserve the strength of the men, by always taking advantage of any slight chance of relieving them of their load; therefore, in crossing a river, for instance, while the leading sections are crossing, those in rear should stack arms and take off their knapsacks.

The troops at the tail of the column being more fatigued than those at the head, the regiments and battalions should alternate in their positions in the column during long marches. This rule should be particularly observed when the roads are bad.

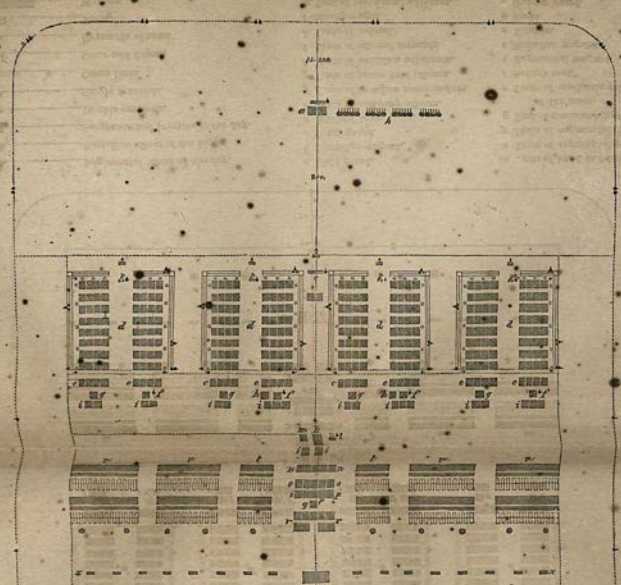
Fig. 189.



a Field-guard.
b Cartridge-wagons.
c Camp guard.
d Soldiers' tents.
e Tents of company officers.
f Tents of battalion commanders.
g Tents of junior field officers.
h Tents of battalion adjutants.
i Tents of officers' servants.
k Tents of colonel.
l Money-wagon.
m Tent of regimental adjutant.
n Tents of band and field music.
o Tents of regimental staff.
p Tents of regimental clerks, &c.
q Tent of commander of the company of the train.
r Tents of mechanics, &c.
s Sutler's tent.
t Regimental wagons.
u Battalion wagons.
x Kitchen.
y Sinks.
z Quarter guard.

Camp in deep order of a regiment of four battalions.

Fig. 190.



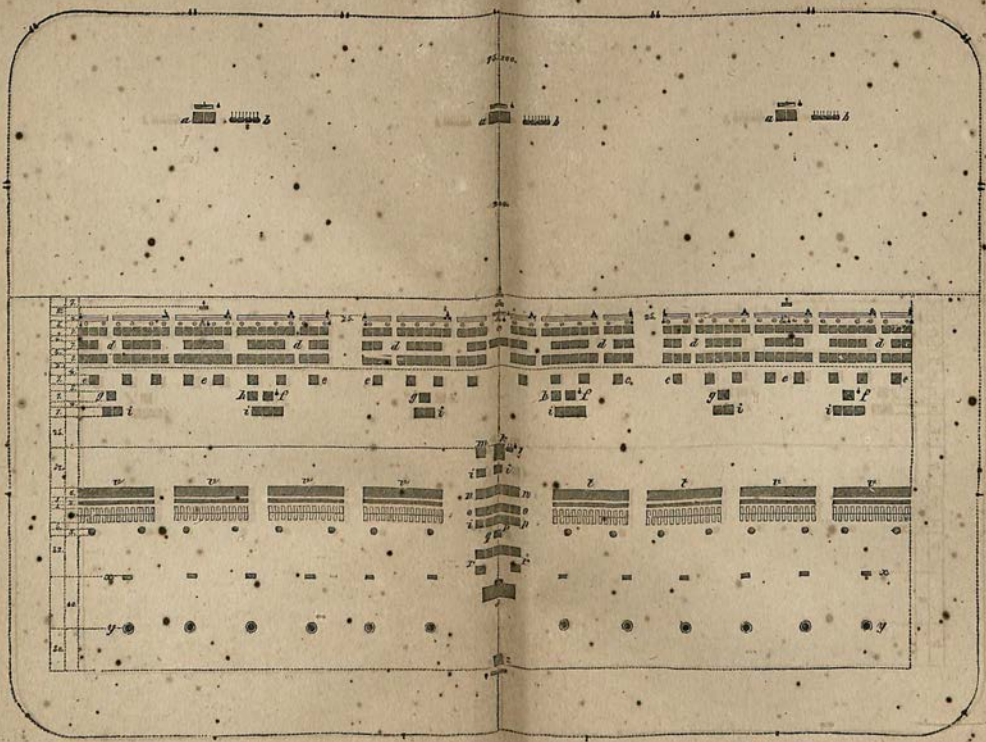
- Regimental officer of the day.
- Battalion officer of the day.
- Sergeants and privates of the day.
- Double sentinels.
- Single sentinels.
- Camp lines.
- Color and drums.
- Pyramids of arms.
- Tents.
- Wagons.
- Harness.
- Horses.
- Forage.

a Field guard.
b Cartridge-wagons.
c Camp guard.
d Soldiers' tents.
e Tents of company officers.
f Tents of battalion commanders.
g Tents of junior field officers.
h Tents of battalion adjutants.
i Tents of officers' servants.
k Tents of colonel.
l Money-wagon.
m Tent of regimental adjutant.
n Tents of band and field music.
o Tents of regimental staff.
p Tents of regimental clerks, &c.
q Tent of commander of the company of the train.
r Tents of mechanics, &c.
s Sutler's tent.
t Regimental wagons.
v Battalion wagons.
x Kitchen.
y Sinks.
z Quarter guard.

(For scale, see fig. 189.)

Camp in deployed order of a regiment with three battalions.

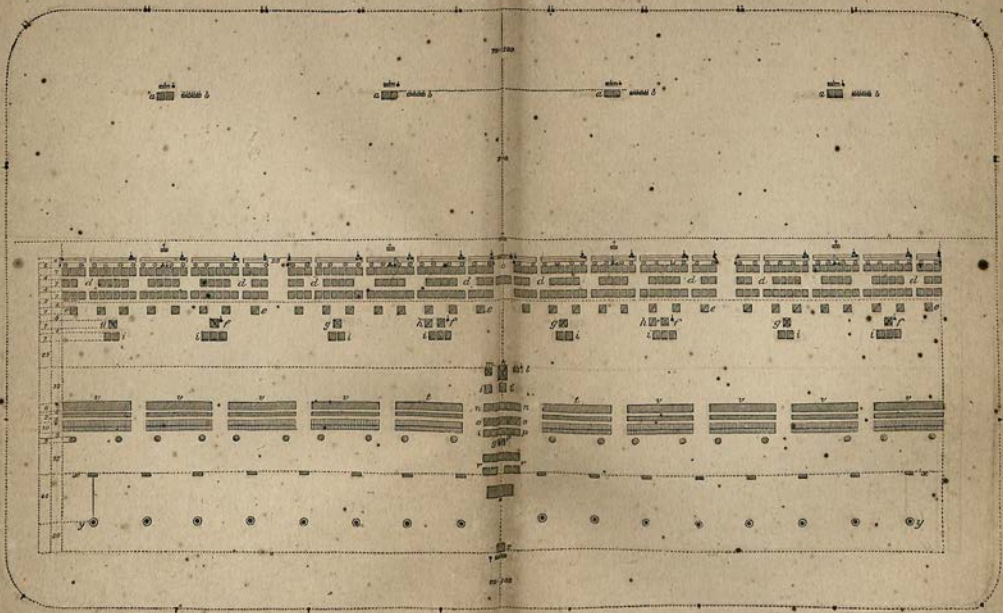
Fig. 191.



[For scale and references, see figs. 189, 190.]

Camp of a regiment of four battalions, with deployed front.

Fig. 192.



[For scale and references, see figs. 189, 190.]

Further details as to the conduct of marches, the duties of billeters, &c., are to be found in the cavalry regulations.

When the troops approach their quarters for the night, the officer commanding the billeters goes out to meet them near the quarters, taking all his men with him, except one from each company, who remain at the company quarters with the guidons.

When foot artillery is marching separately from the infantry, it sends out its own advanced and rear guards.

In a brigade of foot artillery these guards consist, each, of 1 officer, 1 drummer, 3 sergeants, and 20 men, at 200 paces from the batteries.

They form in 3 ranks, and detach patrollers as a battalion of infantry.

A single battery sends out an advanced and rear guard, each, of 1 sergeant, 1 corporal, and 6 men, at 100 paces from the battery; they detach patrollers as prescribed for the advanced and rear guards of a company of infantry.

In most respects the rules laid down for the march of horse artillery apply to the case of foot artillery

The detachments march at their posts; but in deep snow they are allowed to follow the pieces.

OF ENCAMPMENTS.

The encampments of infantry may be arranged in two ways: in deep order, *i.e.* in columns of attack; or with a deployed front.

Figs. 189 to 192 show the order of encampment for regiments of 3 and 4 battalions, in both ways.

The encampments with a deployed front are used in warm climates, and especially in cases where the troops are to remain a long time in the same place.

The allowance of tents is as follows: 1 for every field officer, 1 for every 2 company officers, 1 for every 15 sergeants and privates, 2 tents for field guard, 2 for the camp guard, 1 for the quarter guard.

The details of encampments are as follows;—

1. The tents of the companies of each battalion are placed in the tactical order of battle.

2. In the deep order, the tents of each company are in 4 ranks; in the deployed order, they are in 3 ranks.

3. A square of 7 paces on each side is allowed for every tent.

4. The intervals between the soldiers' tents are 4 paces.

5. The camp-lines are 3 lines of sods, occupying a width of 4 paces, placed at the distance of 5 paces from the tents; in the deployed order, they are only in front of the camp; in the deep order, in front and on the flanks of each battalion.

6. The pyramids of arms, (Fig. 193,) 1 for each battalion, are between the lines and the tents. In deep order, 6 pyramids are in front of each battalion, and 5 on each flank; in deployed order, there are 2 pyramids in front of each platoon. If the pyramids are not set up, the arms are stacked, in good weather.

Fig. 193.

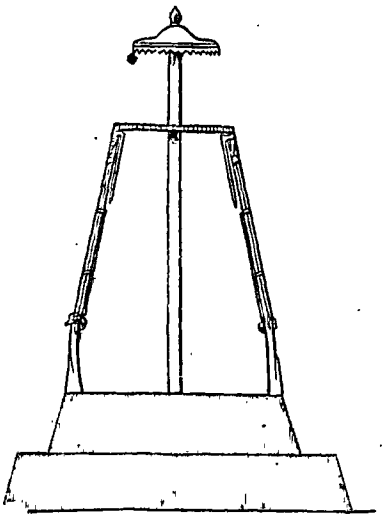
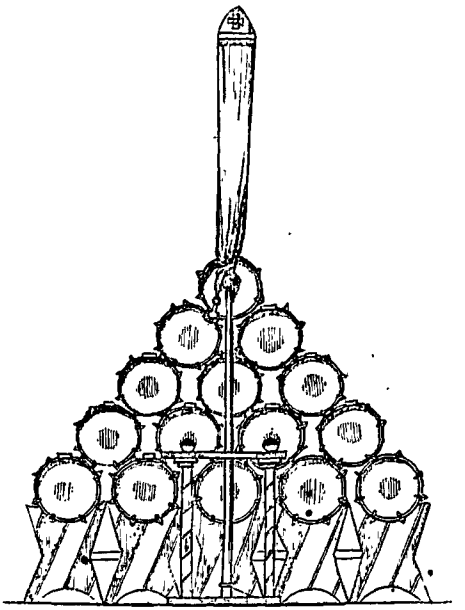


Fig. 194.



7. In the centre of each battalion, on the line of pyramids, the drums are piled on a stand, and the colors placed in a rack in front of them. (Fig. 194.) The drummers of the day place their drums on a separate stand, on the left of the colors.

8. In the deployed camp of a single battalion, or in the 2d battalion of regiments of 3 battalions, an interval of 20 paces is left between the platoons of the color-company, for the tents of the camp guard.

9. The tents of the company officers are 7 paces in rear of the soldiers' tents.

10. Five paces farther in rear are the tents of the battalion commanders and the junior field officers; the battalion commanders in rear of the centre of the right wing, the others in rear of the left wing of their respective battalions.

11. The tent of the battalion adjutant is on the left of that of the battalion commander. If there is no junior field officer, the tent of the adjutant may occupy the place designated for that of the former.

12. The tents of the officers' servants are 4 paces in rear of those last mentioned.

13. The tent of the colonel is behind the centre of the regiment, 25 paces in rear of those of the officers' servants. The regimental adjutant on his left.

14. The musicians' tents are 32 paces behind the tent of the colonel.

15. Seven paces in rear of the musicians are placed the tents of the commissioned staff, *i.e.* the paymaster, quartermaster, surgeons, judge advocate, and chaplain; in rear of these are their servants, the clerks of the regimental office, &c.

16. In rear of these are the men of the company of the train; their commander is in front of them.

The wagons are placed as follows:

1. The money-wagon on the right of the colonel's tent.

2. The cartridge-wagons with the field guard; in deployed order they are with the field guards of their respective battalions.

3. The ambulances, wagons with hospital stores, medicine, and tools, the church-wagons, travelling forges, and other government wagons, also the artel and baggage wagons of the regimental staff, are placed, in regiments of 3 battalions, on the right of the regimental staff; in regiments of 4 battalions, on both sides of it. These wagons are formed in 2 ranks: in the front rank those belonging to the officers and men of the staff; in the 2d rank the government wagons.

4. The wagons belonging to the battalion, such as: provision-wagons, tent, artel and officers' wagons, are placed in rear of the battalions, in 2 ranks; in the front rank, the provision and tent wagons; in the rear rank, the artel and officers' wagons.

5. In deployed order the wagons are placed as in deep order, except that they are in one rank.

6. Behind the wagons, not nearer than 30 paces, are the kitchens, and near them the sod tables and seats for the men's messing.

7. Forty paces in rear of the kitchens are the sinks.

The quarter guard is 30 paces behind the line of sinks.

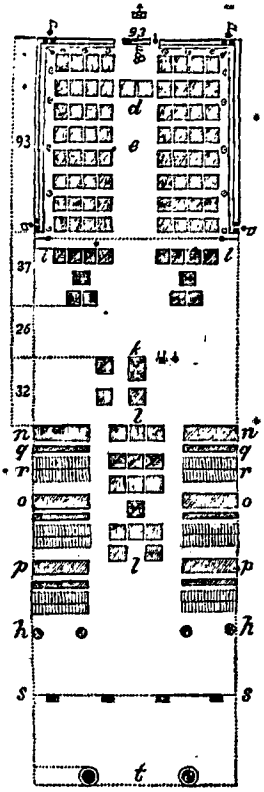
According to the principles laid down above, in deep order, the camp of a battalion occupies a front of 95 paces; for a regiment of 3 battalions, 335 paces; for a regiment of 4 battalions, 455 paces; and the depth of such a camp is 340 paces, from the front lines to the sinks.

In a deployed camp, a battalion occupies a front of 184 paces; a regiment of 3 battalions, 622 paces; a regiment of four battalions, 811 paces: the depth of such a camp is 268 paces.

(Fig. 195.) In the camp of a sapper battalion, the engineer-wagons are in front of the others.

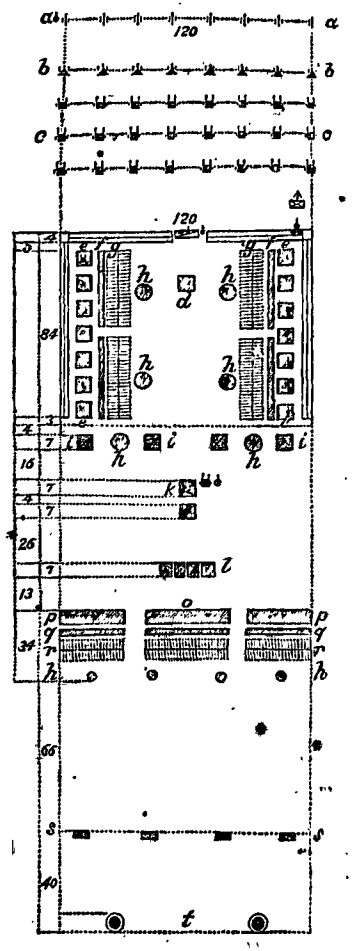
Camp of a battalion of sappers.

Fig. 195.



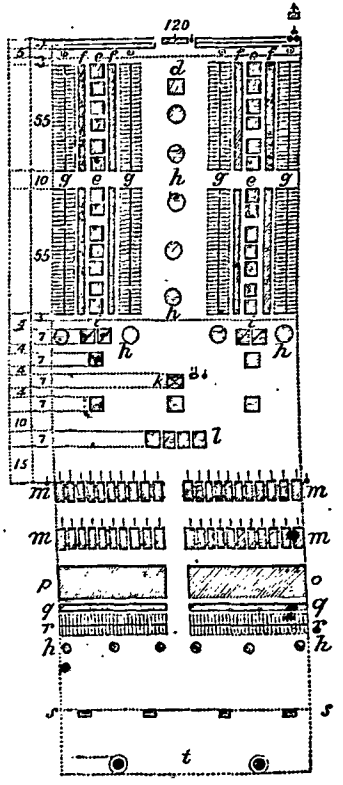
Camp of a heavy foot battery.

Fig. 196.



(For references, see p. 273.)

Fig. 197.



Camp of a ponton-train and company of sappers.

a ..... Line of guns.
b ..... Line of limbers.
c ..... Line of caissons.
d ..... Tents of camp guard.
e ..... Soldiers' tents. In fig. 197 the dark lines indicate the front of the tents.
f ..... Harness..... } of the battery and ponton train.
g ..... Picket-ropes ... }
h ..... Forage-stacks.
i ..... Tents of company officers.
k ..... Tents of commanders, the money-wagons being alongside.
l ..... Tents of non-commissioned staff.
m ..... Forty-two ponton-wagons, in two lines.
n ..... Engineer-wagons of the sapper battalion.
o ..... Government wagons.
p ..... Artel and officers' wagons.
q ..... Harness..... } of the wagons.
r ..... Picket-ropes }
s ..... Kitchens.
t ..... Sinks.

Officers of the day.

Sergeant and privates of the day.

Sentinels.

Fig. 197 shows the arrangement of a park of pontons, with the camp of the company of sappers serving with it.

Fig. 196 gives the details of the camp of a heavy battery; that of a light battery differs from it only in having 2 tents less. When two batteries are encamped side by side, an interval of 25 paces is left for the camp guard.

If the troops are in huts, instead of tents, they are arranged according to the rules for encampments, as shown in fig. 198. The battalions are arranged in columns of attack, each platoon having a separate hut.

Many of the details of encampments, such as with regard to hospitals, &c., as given in the cavalry regulations, apply to the infantry.

Fig. 199 shows the arrangement of a division of infantry, with its artillery, in a camp in deep order.

Fig. 200 shows the arrangement of a similar camp for 2 divisions; the regiments are supposed to be of 4 battalions, the artillery brigades of 4 batteries each.

The rules and dimensions which have been given are to be regarded as standards, from which it is permitted to depart only in cases of absolute necessity; circumstances may require the intervals to be increased or diminished; the disposition of the artillery to be changed; the front of the camp to be on a broken line, &c., &c.

To superintend the daily duty in camp, the following details are made in a regiment:

1. A regimental officer of the day, who is one of the commanders of companies.

2. A battalion officer of the day for each battalion, from among the lieutenants.

3. In each company, 1 sergeant and 2 privates of the day.

4. A drummer of the day in each battalion.

5. Sergeants of the day in charge of the kitchens.

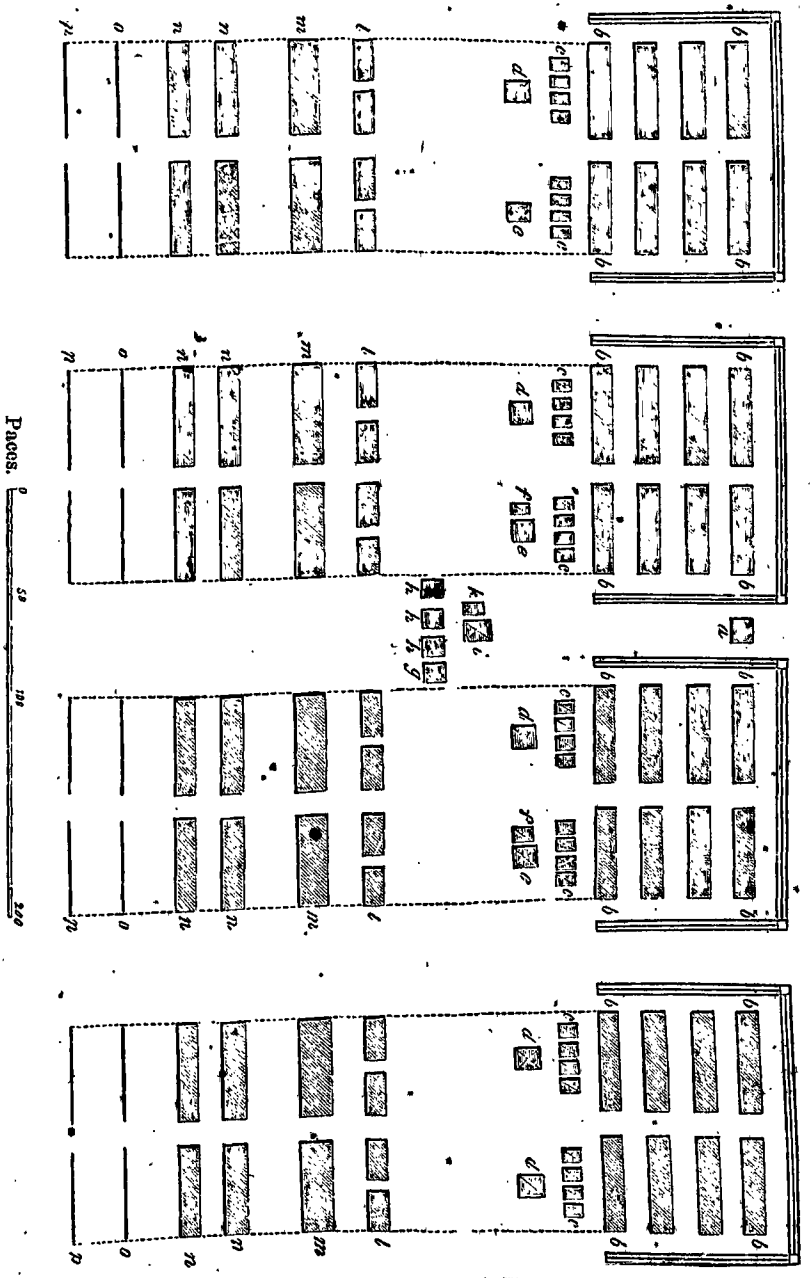
In an isolated battalion a similar detail is made, except that the battalion officer of the day is one of the captains.

In an isolated brigade there is a brigade officer of the day; in every division there is a division officer of the day, but none of brigade.

These officers are from the number of battalion commanders and junior field officers.

When there are several divisions in camp, there is a camp officer of the day, who is one of the commanders of the infantry brigades and regiments, or of the artillery brigades.

If the commander approaches the camp, the privates of the day call out, "*Parties of the day on the lines!*" at which they take post as follows: the regimental officer of the day in front of the centre of the regiment, 15 paces from the lines; the battalion officers of the day in front of the

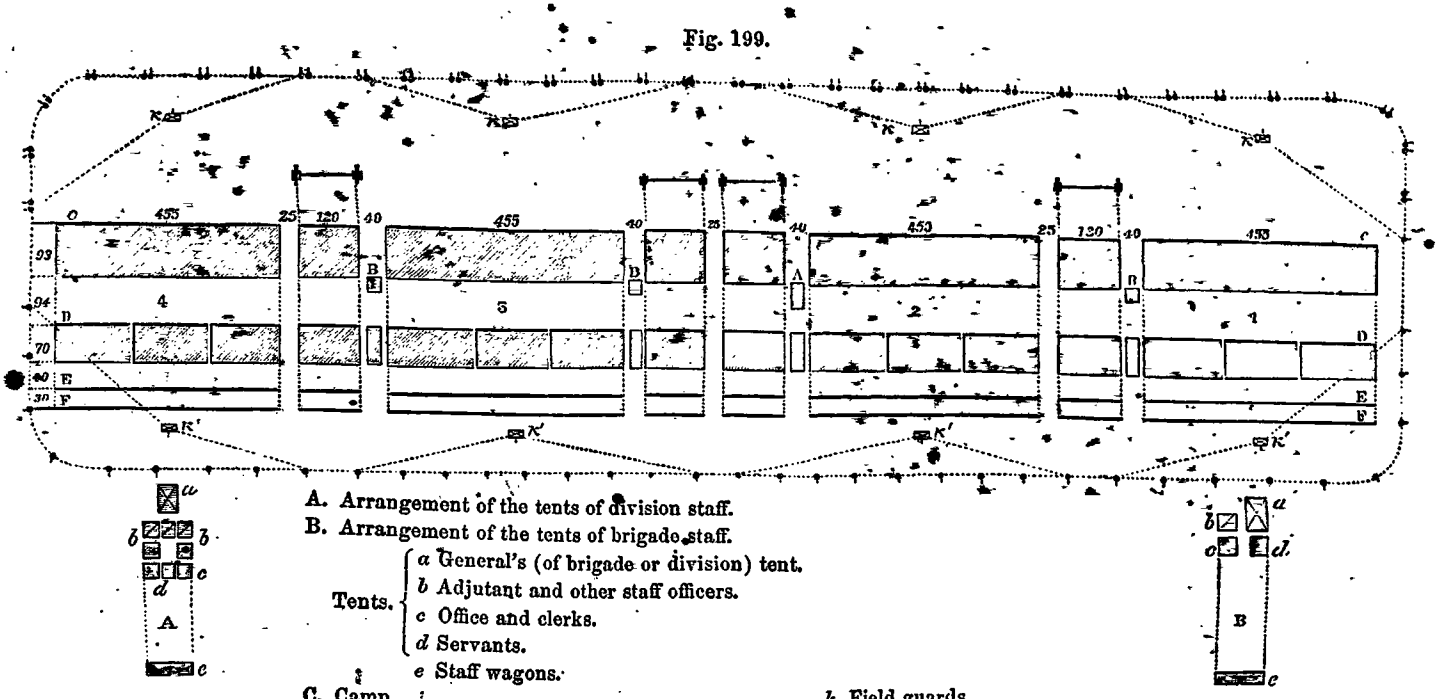


Camp of huts.—Fig. 198.

a Hut of camp guard.
b Soldiers' huts.
c Company officers' huts.
d Hut of junior field officers.
e Hut of commanders of battalions.
f Huts of battalion adjutants.
g Huts of clerks.
h Huts of band.
i Hut of colonel.
k Hut of regimental adjutant.
l Kitchens.
m Messing-huts.
n Wagons, workshops, storehouses, &c.
o Stables.
p Sinks.

Camp of a division of infantry, in deep order.

Fig. 199.



A. Arrangement of the tents of division staff.
B. Arrangement of the tents of brigade staff.

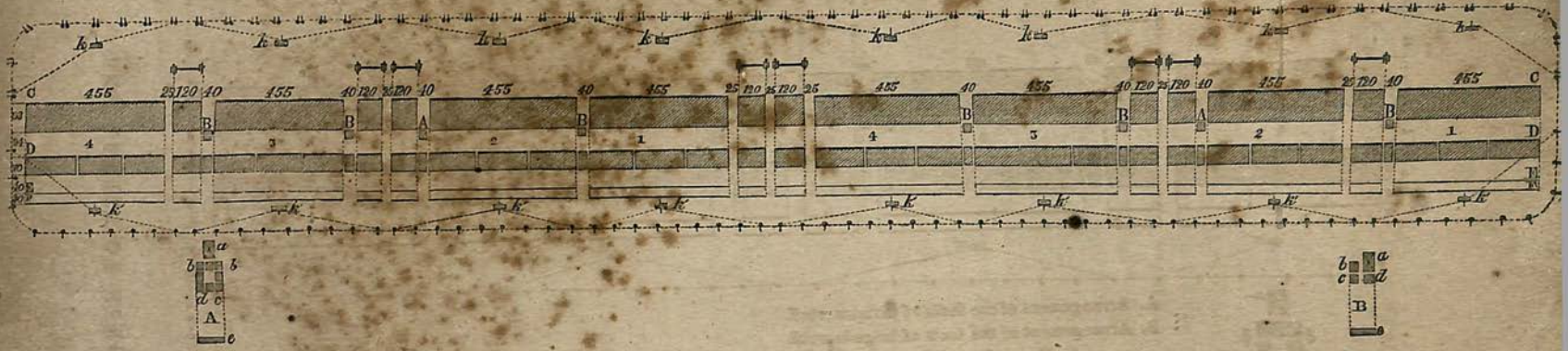
Tents.
- *a* General's (of brigade or division) tent.
- *b* Adjutant and other staff officers.
- *c* Office and clerks.
- *d* Servants.
- *e* Staff wagons.

C. Camp.
D. Wagon-camp.
E. Kitchen.
F. Sinks.

k Field guards.
k' Quarter guards.

Fig. 200.

Camp of two divisions of infantry, in deep order.



A. Arrangement of tents of division staff.
B. Arrangement of tents of brigade staff.

Tents.
- *a.* General of brigade or division.
- *b.* Adjt. and other staff officers.
- *c.* Office and clerks.
- *d.* Servants.
- *e.* Staff wagons.

C. Camp.
D. Wagon-camp.
E. Kitchens.
F. Sinks.
K. Field guards.
K′. Quarter guards.

colors, 8 paces from the lines; the sergeants and privates of the day at the guidons of their companies; the drummer of the day by his drum. (See Figs. 189 to 192.)

OF FIELD, CAMP, AND QUARTER GUARDS.

(Figs. 189 to 192.) When encamped, infantry post field, camp, and quarter guards. The field guards protect the front of the camp by a chain of double sentinels; the quarter guards supply a chain of single sentinels in rear of the camp; the camp guards furnish the sentinels for the interior of the camp.

In camps in deep order each regiment posts a field guard; in deployed camps, each battalion; each regiment always posts a camp and quarter guard.

Isolated battalions post field, camp, and quarter guards.

The field guards are placed about 200 paces in front of the camp; the quarter guards not less than 30 paces behind the sinks.

The chains of sentinels of the field and quarter guards are posted at from 75 to 100 paces from the guards; they should be drawn in on both flanks of the encampment.

The sentinels' posts are about 100 paces apart.

In the field guard the sentinels of the same pair are about 100 paces apart.

The sentinels of the field and quarter guards carry their pieces at a shoulder.

In the field chain the grenadiers, carbineers, and riflemen, do not stand in the same pair with men of the other companies.

The camp guard is posted, in a separate battalion, in the interval between the two wings; in regiments having two or four battalions, in the central interval of the regiment; in regiments of three battalions, in the interval between the wings of the centre battalion.

By the camp guard sentinels are posted over the colors, arms, and at the tents of the colonels and battalion commanders. The sentinels over the colors, and at the tents of the battalion commanders, stand at an order; those over the arms and at the colonel's tent, at a shoulder.

Men from the élite companies are posted over the colors.

In camp the arms of all the guards are stacked.

All the sentinels stand in front of the block on which their knapsacks are placed. If there is no block, the knapsack is laid on the ground, one pace in rear of the sentinel. In all cases the knapsack-flap is upwards, the top towards the sentinel, and the straps rolled on top. In each regiment, and also in each separate battalion, the field guard is senior to the others, which are subordinate to it in all things. In regiments encamped with deployed front, the different field guards are senior by turns.

If there is more than one regiment in camp, then one of the field guards is designated in turn as senior, and is called the "*senior redant.*"

The field guards of separate battalions are never detailed as senior redant.

In encampments the following rules are observed with regard to the detail of men for guard duty:

1. In a regiment the men are detailed from all the battalions; and in the battalions, from all the companies.

2. Each guard consists of men of the same battalion, except in the camp guards of 4-battalion regiments, which are from two of the battalions.

3. In deployed camps each battalion supplies its own field guard.

4. Field and camp guards are commanded by officers; quarter guards, by sergeants. The senior officers on guard are with the field guards; with the senior redant there are two officers.

5. There is a drummer with every field and camp guard; if there are any riflemen on guard, then a horn-player is detailed; when any of the grenadiers or carbineers are on guard, a fifer is also detailed. At the senior redant there are one drummer, one fifer, and one horn-player; if any riflemen are present, there are two horn-players.

At the guards the drums are laid on the ground; the horns on the left side of the knapsack-block of the sentinel at the guard-tent. If both drummers and horn-players are present, the horns are laid on the drums.

The regulations give minutely the strength of the various guards in all cases; in this extract a few examples will be given.

GUARDS IN A DEEP CAMP OF A SINGLE BATTALION.

(*a.*) The field guard: 1 officer, 2 sergeants, 1 musician, 30 privates.

The following sentinels are posted:

At the guard-tent	1	
In the chain, 4 pairs of sentinels	8	
	9	men in each relief.
For 3 reliefs	27	
Corporals for posting reliefs	2	
Private as orderly	1	
Total	30	

One of the sergeants makes the necessary reports.

(*b.*) The camp guard: 1 officer, 2 sergeants, 1 musician, 24 privates.

This guard posts the following sentinels:

At the guard-tents	1
Over the color	1
Over the arms	4
Over the tent of battalion commander	1
	7 men in each relief.
For 3 reliefs	21
Corporals to relieve sentinels	2
Private, as orderly	1
Total	24

For a sapper battalion, 3 extra men may be detailed to furnish a sentinel over the engineer-wagons.

(*c.*) The quarter guard: 1 sergeant, 20 privates.

The following sentinels are posted:

At the guard-tent	1
In the chain, 4 posts	4
	5 men in each relief.
For 3 reliefs	15
Corporal to post sentinels	1
Corporal to make reports	1
Sentinels over prisoners	3
Total	20

GUARDS IN A DEPLOYED CAMP OF A REGIMENT HAVING FOUR BATTALIONS.

(*a.*) The field guard in each battalion: 1 officer, 3 sergeants, 1 musician, 22 privates.

Each field guard posts the following sentinels:

At the guard-tents	1
In the chain, 3 pairs of sentinels	6
	7 men in each relief.
For 3 reliefs	21
Private, as orderly	1
Total	22

(*b.*) The camp guard: 1 officer, 2 sergeants, 1 musician, 59 privates. This guard posts the following sentinels:

At the guard-tents	1
Over the colors	4
Over the arms	8
Over the tents of commanders	5
	18 men in each relief.
For 3 reliefs	54
Corporals for posting reliefs	4
Private, as orderly	1
Total	59

(*c.*) Quarter guard: 2 sergeants, 39 privates. It posts the following sentinels:

At the guard-tents	1
In the chain, 10 posts	10
	11 men in each relief.
For 3 reliefs	33
Corporals to post reliefs	2
Corporal to make reports	1
Over the prisoners	3
Total	39

The corporals are not regarded as non-commissioned officers; and, in addition to those mentioned above, others are posted as sentinels at the tents of commanders, &c.

In camp, prisoners are confined—officers at the camp guard, sergeants and privates at the quarter guard. There is always a sentinel, at an order, posted over the tent in which an officer or soldier is confined. The commander-in-chief may replace the camp and quarter guards by sergeants' pickets.

The picket which replaces the camp guard will be of the following strength:

In a separate battalion, 1 sergeant and 10 men.

In a regiment of four battalions, 1 sergeant and 19 men.

If there are prisoners under the charge of the picket, 3 men are added to the numbers given above.

The strength of the picket which replaces the quarter guard must depend upon circumstances and the number of prisoners under its charge.

In addition to the guards already mentioned, special guards are detailed for those villages near the camp which are occupied as depots, quarters for staff officers, &c.

The guards detailed by foot artillery do not differ essentially from those prescribed for horse artillery in the cavalry regulations.

The guard detailed by a company of sappers serving with a ponton-train is of 1 sergeant and 20 men, as follows:

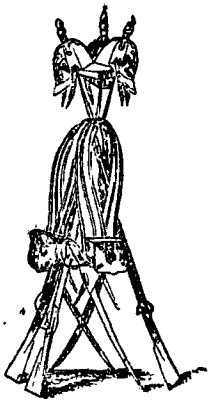
At the guard-tent	1
Over the arms	2
Over the ponton-park	2
At the commander's tent	1
	6 men in each relief.
For three reliefs	18
Corporal to post sentinels	1
Corporal to make reports	1
Total	20

Under ordinary circumstances, the sentinels are relieved every two hours.

The general rules for the performance of duty in camp, patrols, rounds, care of arms, reports, alarms, precautions against fires, &c., &c., as given in the cavalry regulations, apply to the case of infantry.

BIVOUACS.

Fig. 201.



Troops are said to bivouac when they pass the night in the open air, or under shelters hastily constructed of branches, brush, straw, &c.

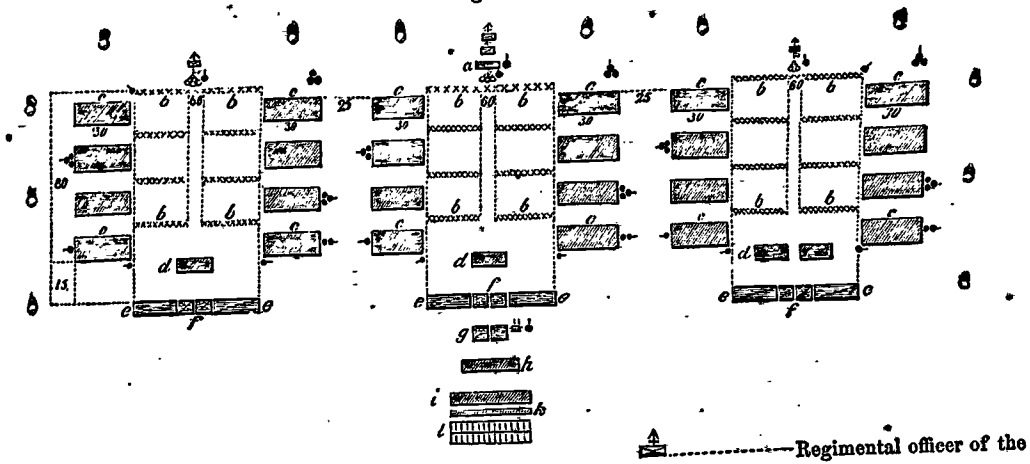
When infantry are to bivouac, (fig. 198,) they are formed on the ground they are to occupy in columns of attack, but the distances between the platoons must not be less than 20 paces, and the men open out well in ranks; they then stack arms where they stand, hang their belts and helmets on the stacks, (fig. 201,) and lay the knapsacks on the ground behind the stacks.

In this manner the bivouac of a battalion occupies a front of 60 paces and a depth of 80.

In bivouac the colors remain at their posts,—*i.e* between the stacks of the 4th and 5th platoons,—leaning against the front of the pile of drums.

Bivouac of a regiment of 3 battalions.

Fig. 202.



a Camp guard.
b Stack of arms.
c Soldiers' bivouacs.
d Bivouacs of band and field music.
e Bivouacs of officers.
f Bivouacs of battalion commander and staff.
g Bivouacs of colonel and regimental adjutant.
h Bivouacs of mechanics, &c.
i Government wagons.
k Harness.
l Picket-ropes.

Regimental officer of the day.

Officer of the day.

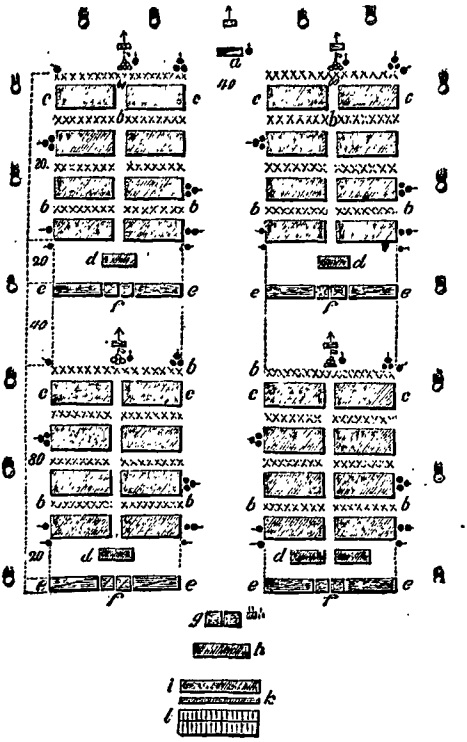
Sergeants and privates of the day.

Sentinels.

Bivouac-fires.

Bivouac of a regiment of 4 battalions.

Fig. 203.



(For references, see p. 283.)

The officers, band, and field music, are placed in rear of the battalions.

Fig. 202 shows the arrangement of a bivouac which is to be occupied for some time, and when the men are permitted to erect shelters.

In this case, as soon as the stacks are formed and the accoutrements hung upon them, the half battalions face outwards, march out clear of the stacks, and then face again to the front.

This manner of arranging the bivouac offers the advantage of giving the men more room, but presents the inconvenience of requiring more ground, for each battalion occupies a front of 120 paces; this method can therefore be employed only when the ground permits a great development. In bivouac, the shelters should be arranged with a certain regularity, leaving free passages between them.

Although, in figs. 202, 203, particular dimensions are given for the front and depth of the bivouacs of battalions and the intervals between them, yet, whenever circumstances permit, these dimensions may be increased, so as to give the men more room; but these dimensions should never be decreased.

Regiments of 3 battalions bivouac in one line; those of 4 battalions, in two lines, 140 paces apart, counting between the heads of the battalions.

Batteries are placed in bivouac either deployed or in column, as shown in figs. 204, 205.

In the front line, artillery bivouacs 120 paces in front of the infantry, and is deployed; in the rear line and reserves, it may be placed behind the infantry, in columns by half batteries.

The front of the bivouac of a deployed battery is 120 paces; when in column, by half batteries, it is 60 paces.

An interval of 40 paces is left between the bivouacs of batteries and the nearest battalions.

When in rear of the infantry, artillery is not placed less than 100 paces from it, counting from the rear of the infantry to the line of guns.

Batteries in bivouac in front of infantry, even if in reserve, should always be unlimbered; those in rear of the infantry should always be limbered up.

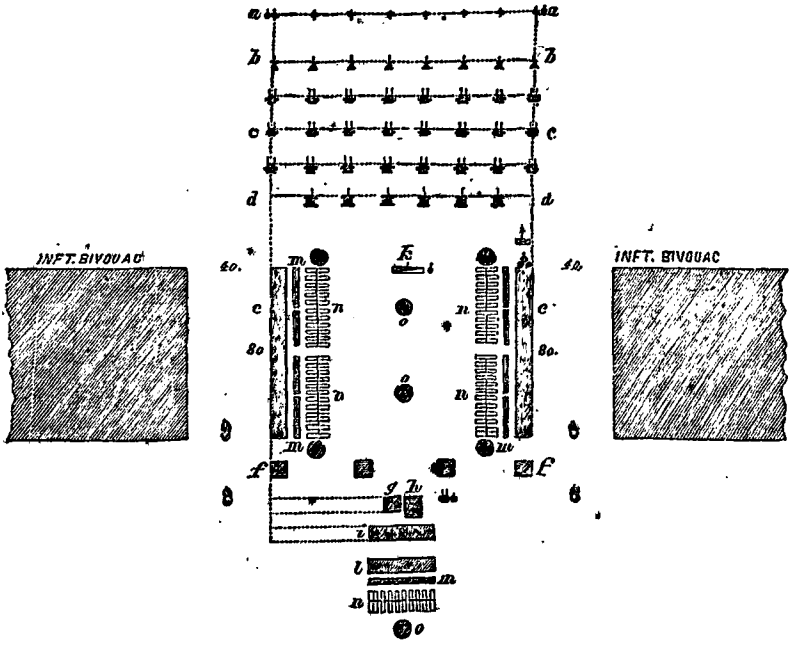
Figs. 206 to 211 give examples of the arrangement of the bivouacs of brigades and divisions, both in the line of battle and in reserve.

The examples of bivouacs given should be regarded only as guides; for the ground, and other circumstances, may often make it necessary to depart from them, both in the distribution of the troops and with regard to the intervals between them.

The troops of the advanced guard, when in sight of the enemy, always bivouac in the order of battle; therefore the arrangements of their bivouac must depend upon the nature of the ground, and cannot be determined by any arbitrary rules.

Bivouac of a battery deployed.

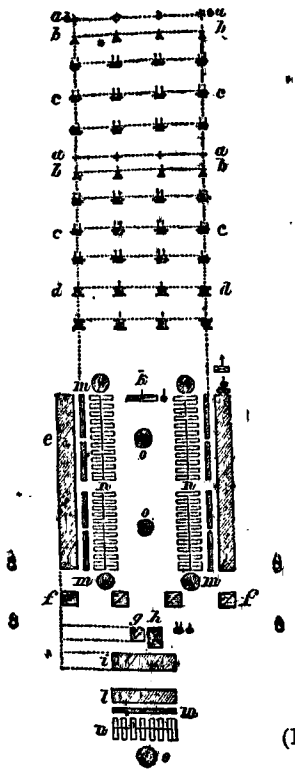
Fig. 201.



(For references, see p. 287.)

Bivouac of a battery in column.

Fig. 205.



a Line of pieces.
b Line of limbers.
c Line of caissons.
d Line of artillery-wagons.
e Bivouac of soldiers.
f Bivouac of battery officers.
g Bivouac of 2d in command.
h Bivouac of commander of the battery.
i Drummers and mechanics.
k Camp guard.
l Baggage-wagons.
m Harness.
n Picket-ropes.
o Forage-stacks.

Officer of the day.

Sergeant and privates of the day.

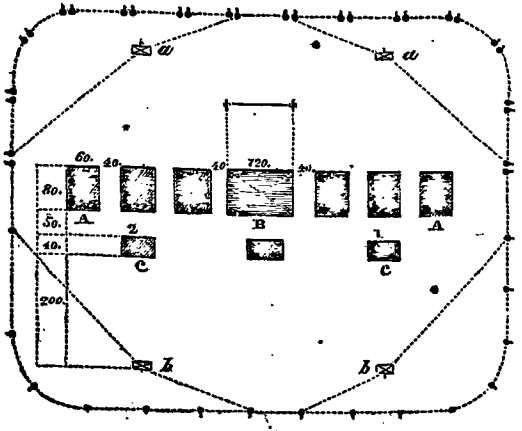
Sentinels.

Bivouac-fires.

(For scale, see p. 286.)

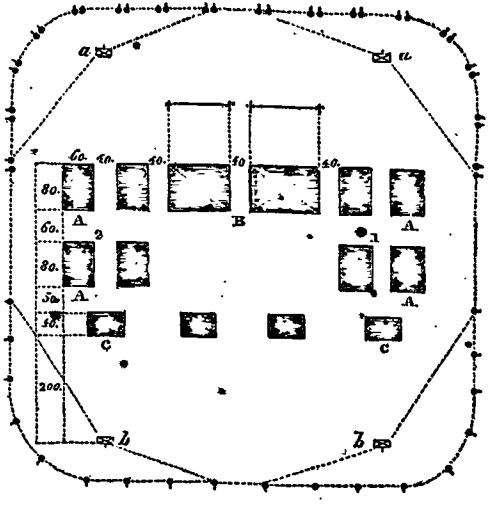
Bivouac of a brigade of 3-battalion regiments.

Fig. 206.



Bivouac of a brigade of 4-battalion regiments.

Fig. 207.

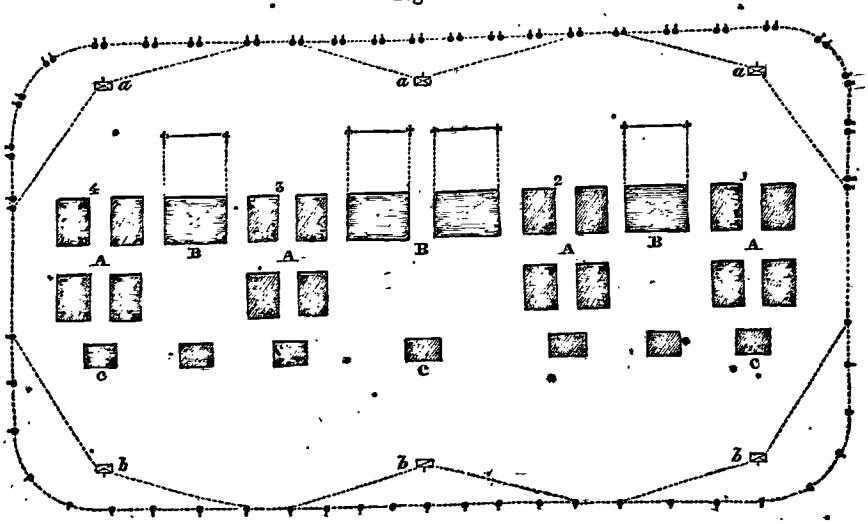


A Bivouac of a battalion.
B Bivouac of the artillery.
C Wagons.
a Field guards.
b Quarter guards.

(For scale, see p. 291.)

Bivouac of a division of regiments of 4 battalions.

Fig. 208.

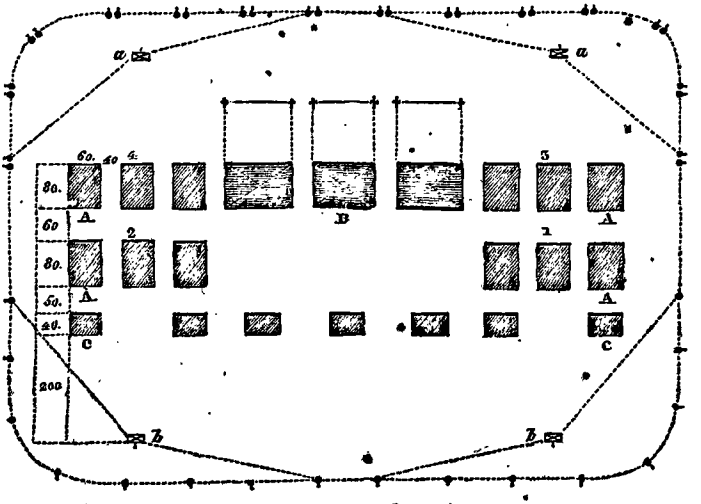


A Bivouac of a battalion.
B Bivouac of the artillery.
C Wagons.
a Field guards.
b Quarter guards.

(For scale, see p. 291.)

Bivouac of a division of regiments of 3 battalions.

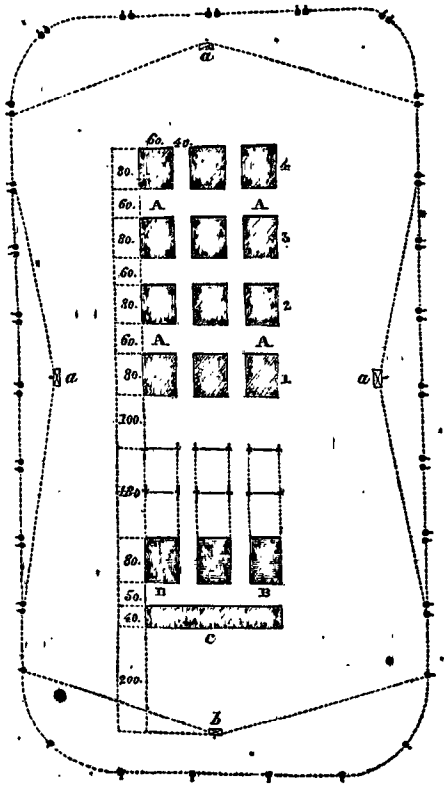
Fig. 209.



(For scale, see p. 291.)

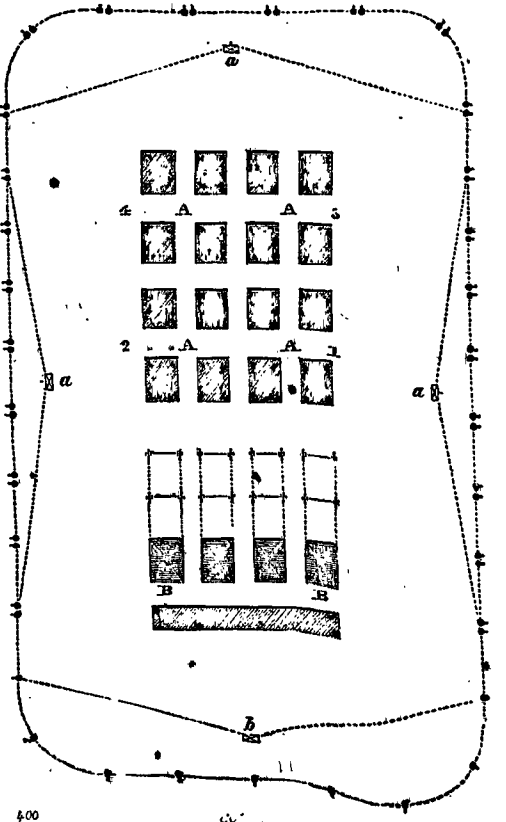
Bivouàc of a division of 3-battalion regiments.

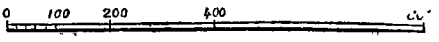
Fig. 210.



Bivouac of a division of 4-battalion regiments.

Fig. 211.





If the troops are to pass the night in readiness for action, they are placed in bivouac a little in rear of the position for battle; the different parts may also be closed a little nearer together, so as to hold them better in hand.

In bivouac, the cartridge-wagons of the advanced guard and lines of battle are placed with the quarter guards, instead of with the field guards; in this case, care must be taken to have the kitchen and other fires at a safe distance.

The rest of the wagons are arranged as prescribed in the cavalry regulations.

In bivouac, guards are posted as in encampments, observing what follows:

1. In divisions arranged in two lines, (figs. 208, 209,) the regiments of the 1st line post field guards, those of the 2d line post quarter guards; in addition, there may be, if necessary, sergeants' guards on the flanks, to connect the chains of the field and quarter guards.

2. In divisions posted in reserve, (figs. 210, 211,) the 4th regiment posts field guards, the 1st regiment posts quarter guards, the 2d and 3d post field guards on the flanks.

3. Camp guards are 10 paces in front of the centre of the troops posting them.

4. In regiments of 4 battalions, arranged in 2 lines, the camp guard is posted opposite the interval between the battalions of the 1st line; if there is a battery in this interval, the guard is posted on its right.

5. The sentinels posted over the arms, at the angles of the battalions, (figs. 202, 203,) are arranged as in encampments, with the difference, that, for a regiment of 4 battalions, in two lines, (fig. 203,) two posts are necessary for the exterior angles of the 2d and 3d battalions.

6. In bivouac, there is a sentinel at the hut of the battalion commander.

A guard may be posted at the quarters of detached commanders.

In all other respects the rules for cavalry bivouacs apply to those of infantry.

ARMS, ACCOUTREMENTS, ETC., OF THE INFANTRY.

The mass of the infantry are armed simply with the musket and bayonet; all sergeants, some of the regiments of the guard, and the élite companies of all regiments, have a short sabre.

The rifle battalion have a rifle, with sword bayonet.

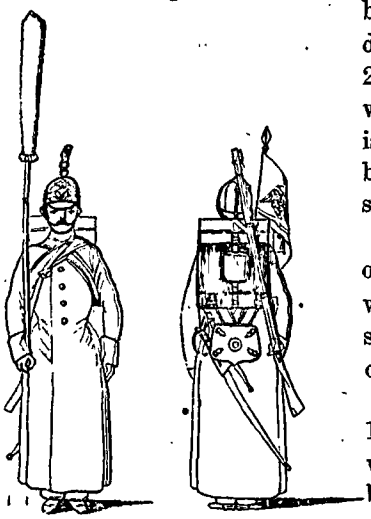
In the old pattern of belts, still in general use, there were two thin, broad shoulder-belts,—one for the cartridge-box, the other for the bayonet and sword scabbards; the cap-pouch on the front of the cartridge-box belt; no waist-belt.

In the new pattern, there is a single shoulder-belt for the cartridge-box, and a waist-belt, to which the bayonet and sword scabbards are attached; the cap-pouch is on the end of the cartridge-box.

The cartridge-box contains 60 rounds.

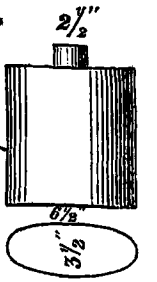
The knapsack is of hide, with the hair outside; it has two belts, crossing on the breast, and attached to the knapsack by swivels.

Fig. 212.



Sergeant of billeters.

Fig. 213.



The canteen is a tin bottle, of the shape and dimensions given in fig. 213; it has a tin cover which serves as a cup; it is carried strapped to the back of the knapsack, as shown in fig. 212.

The uniform coat, or overcoat, is carried, in a water-proof cylinder, on top of the knapsack; the forage cap in a linen pocket on the front of the knapsack.

In the knapsack are carried: 2 shirts, 1 pair drawers, 2 extra pieces of linen for wrapping the feet, leather for 1 pair of boots, 3 brushes, 1 pair of summer or winter pants, and 4 days' bread or biscuit. There is a little pocket in the knapsack for a small rectangular tin box, containing spare percussion-caps.

The wiper, screw-driver, and ball-screw are carried in the cartridge-box.

In the cartridge-wagons, 4 to each battalion, there are carried 40 rounds extra for each man.

The officers have a light sabre, with a leather scabbard.

The field music have drums and horns; the élite companies have fifes. The drums are of brass, 18″ in diameter, 12″ deep.

The transportation usually allowed is as follows: 1 small wagon for the officers of each company; 2 for the soldiers' tents; 2 for 6 days' bread. Cattle are driven on the hoof.

The old troops are seldom drilled, and are annoyed as little as possible; target-firing is much practised.

The ordinary length of march is from 13 to 17 miles a day; it is usual to halt one day out of every three or four.

THE MILITIA.

The organization of the militia dates from the commencement of the recent war. They were, in fact, battalions of regular troops, raised for the period of the war, and with certain peculiarities of organization and equipment to distinguish them from the standing army. They were

organized in battalions, of a composition similar to those of the old army, but were not necessarily formed into regiments.

The men were mostly serfs and crown peasants; the sergeants generally from the old army; the officers had for the most part served in the old army, and were principally selected from among the number of those who had resigned their commissions or had been granted unlimited furloughs.

The old troops were much employed as drill-masters for the militia.

UNIFORM.

The dress of the militia was eminently national, having little or nothing in common with the usual uniforms of Europe.

The coat, a Russian caftan, or long, loose, double-breasted frock-coat, with no buttons visible.

The pants always tucked in the boot-tops.

The cap, not unlike the forage cap in use in the United States army during the Mexican War, except that the top was somewhat higher and stiffer, and the visor larger; the only ornament upon the cap a brazen Greek cross.

The coat, pants, and cap always of the same color; which was generally a dark shade of brownish gray, sometimes almost black.

The facings usually of some very dark color.

Instead of overcoats, they had blankets.

The men were not required to crop the hair, nor to shave the beard; both being worn long and full in the Russian style.

The uniform of the officers was similar to that of the men.

ARMS AND EQUIPMENT.

On account of the deficiency in the number of percussion muskets, many of the battalions were armed with the flint-lock muskets.

The only belt was a black leather waist-belt, fastening by a buckle in front. To this were attached: a cartridge-box of black leather, without a frame; the bayonet-scabbard; and a leather case, containing a small hand-axe.

Knapsack of black leather, and without frame; it was secured by means of belts and swivels, as described for the knapsack of the old army.

Considering the very short time these troops had been in service, their appearance and drill were very creditable, and they would, no doubt, have proved to be very efficient troops.

There were large numbers of them at St. Petersburg and on the shores of the Baltic.

PRUSSIAN CAVALRY.

ORGANIZATION.

THE war establishment of the Prussian cavalry consists of the standing army, the landwehr of the first levy, that of the second levy, the depot squadrons, and the landsturm.

All able-bodied men, whatever their rank in life, are required to serve 5 years in the standing army, from their 20th to their 25th year. Of these 5 years, the first 3 are passed with their regiments; during the last 2 they are permitted to return to their homes and compose the reserve of the standing army, being liable to be called to join their regiments at any moment, in the event of a war or other exigency.

They then pass into the landwehr of the 1st levy for 7 years; then, for 7 more, into the landwehr of the 2d levy; after which, they belong to the landsturm.

The standing army performs garrison duty in time of peace. As a general rule, the regiments are stationed in the districts where they are recruited, unless there are special political reasons to the contrary.

The landwehr of the 1st levy is at once called out, upon the commencement of a war, to reinforce the standing army and co-operate with it; its organization and composition are identical with those of the latter, there being a regiment of landwehr cavalry to correspond to every one of the cavalry of the line, and 2 landwehr regiments of the guard. In war they are usually brigaded together; thus the 2d hussars of the line and the 2d hussars of the landwehr belong to the same brigade.

In peace, this levy is called out for drills and manœuvres 2 weeks in each year; at other times merely a skeleton, consisting of 1 captain of the line, 2 non-commissioned officers, and 2 men, is kept at the depot magazine of each landwehr regiment, the complete clothing, armament, and equipment of the regiment being kept in these magazines.

The landwehr of the 2d levy is not quite so numerous as that of the 1st. It is called out only in time of war, and is then employed in service in the interior, or, if necessary, to reinforce the active army.

The landsturm has no regular organization; it is called out only to repel

invasion, and consists of all men less than 50 years old not in the army or landwehr.

The depot squadrons are organized only in time of war. They consist of supernumeraries from the reserve, men drafted from the landwehr, and recruits who are to be drilled 6 months before joining their regiments.

Every regiment of the cavalry of the standing army has one depot squadron in war; those of the guard are of the same strength as the active squadrons; those of the line are 200 strong, since they serve as depots for the corresponding regiments of landwehr of the first levy as well as for those of the line. One hundred and twenty-five men and horses belong to the line regiment; the remaining 75 are for the landwehr.

The war strength of these different kinds of cavalry amounts to 440 squadrons,—2,400 officers and about 65,000 men and horses; this is exclusive of the landsturm.

The cavalry of the standing army consists of 38 regiments, of which 6 belong to the guards, 32 to the line.

The guard regiments are: 2 regiments of cuirassiers, 1 of dragoons, 2 of lancers, and 1 of hussars.

The line regiments are: 8 of cuirassiers, 4 of dragoons, 8 of lancers, and 12 of hussars.

Each regiment consists of 4 active squadrons.

Each squadron of the line regiments is composed of:

1 captain.
1 first lieutenant.
3 second lieutenants.
1 orderly sergeant.
1 ensign, a non-commissioned officer in the line of promotion.
1 quartermaster, a sergeant.
12 sergeants.
3 trumpeters.
127 privates, among whom are 20 corporals and re-enlisted soldiers:—
145 men and horses, exclusive of officers.

The regimental staff consists of 1 colonel, 1 junior field officer, 1 adjutant, (a second lieutenant,) 2 supernumerary captains, 1 paymaster, 1 surgeon, from 2 to 3 assistant surgeons, 1 chief trumpeter, 1 regimental clerk, 4 veterinaries with the rank of orderly sergeant. The supernumerary captains are for the purpose of commanding the skeleton of the corresponding landwehr regiment and the depot squadron, as well as for other detached service.

The junior field officer commands the corresponding landwehr regiment, the captains and adjutant of which are also taken from the line. The squadrons of the guard regiments are stronger by 5 privates than those of the line.

TACTICS AND INSTRUCTION.

The riding drill is a separate work from the tactics proper; it is so very similar to the Austrian that it need not be explained in this report.

The instruction on foot is embraced in the first 36 pages of the tactics, and includes the drill of the recruit, the movements of the squadron and regiment, and the formations for parade, review, &c.

The squadron is the unit of tactics, as well as of interior service. When mounted, it is formed in two ranks, 1 pace apart, the rear-rank covering their front-rank men, and is divided into 4 platoons, numbered from right to left.

In each platoon the men call off by twos for mounting and dismounting; by threes for manœuvring.

The officers, non-commissioned officers, &c., are posted as follows:

The captain, 30 paces in front of the centre; the 1st lieutenant commands the 3d platoon, and is 2 paces in front of its centre; the 2d lieutenant commands the 4th platoon; the 3d lieutenant is a file-closer, in rear of the centre; the 4th lieutenant commands the 1st platoon; the 5th lieutenant commands the 2d platoon.

The sketch on page 298 represents a squadron deployed.

If there is no 5th lieutenant, the 2d platoon is commanded by the ensign, or a suitable sergeant.

If there are but 2 lieutenants present, they command the flank platoons.

The captain may change the arrangement of the officers, as given above, if he thinks proper.

The sketch gives the positions of the non-commissioned officers and trumpeters.

There must be one file-closer for each platoon; if there is a deficiency in the number of sergeants, corporals are detailed to supply their places.

To dismount, the chiefs and left guides of platoons, and Nos. 1 of the front rank, ride forward twice a horse's length, the chiefs of platoons then face towards their men by making a right about; the right guides, Nos. 2 of the front rank, and Nos. 1 of the rear rank, move forward a horse's length; Nos. 2 of the rear rank and the file-closers stand fast; the trumpeters act as prescribed for the rear rank.

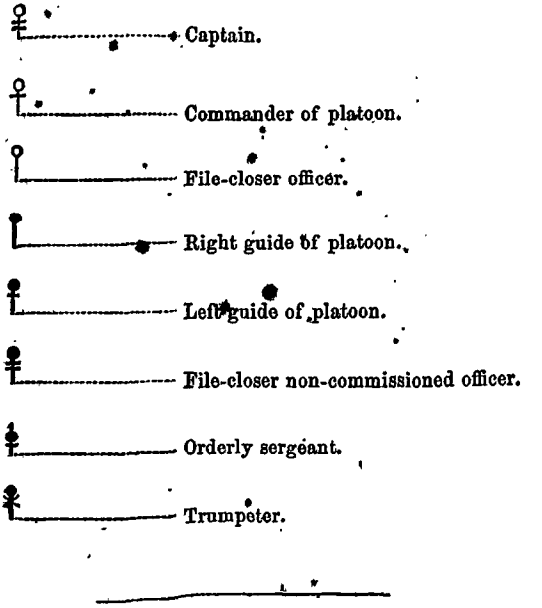
Having dismounted, Nos. 2 of each rank and the right guides close up alongside of the Nos. 1 of their own rank; the file-closers close up on the rear rank; the ranks are thus 4 paces apart.

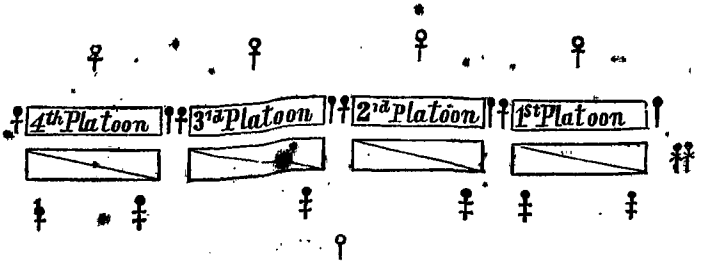
To mount, the ranks are formed 4 paces apart, and the Nos. 1 of each rank, with the left guides, move forward a horse's length.

Having mounted, the ranks are closed on the Nos. 1 of the front rank.

The movements of the squadron are by threes,—never by fours.

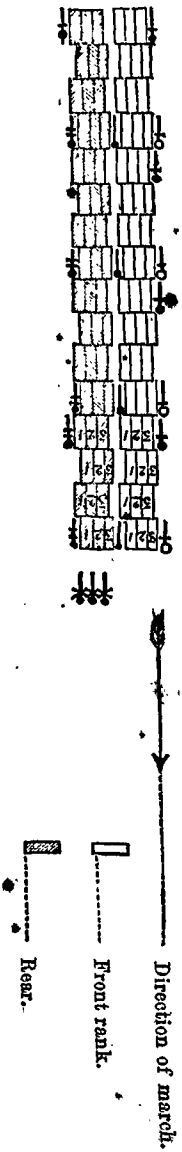
Explanation of signs.





Squadron deployed.

The annexed sketch shows the formation of a squadron gaining ground to the right after having wheeled to the right by threes in each rank.



The squadron may be re-formed into line either by wheeling to the left by threes, or by forming to the front into line; in the latter case the front-rank men of the leading set of threes move forward two horses' lengths and halt, their rear-rank men take their places behind them, and the other sets of threes gain their places by obliquing to the left.

Platoons may be formed in the same manner.

The annexed sketch will serve to explain the peculiarity in the column by threes, and the column by files; in the column by threes the rear-rank men, instead of covering their front-rank men, ride behind the intervals, as shown in the sketch; in the column by files, in which each rear-rank man is alongside of his front-rank man, the same thing is observed by the successive files.

In column by platoons, the non-commissioned file-closers place themselves on the flanks of the rear rank; the officer acting as file-closer is on the flank of the column opposite the guides, and opposite the middle of the column.

The *half column* is formed from line by causing all the platoons to make, simultaneously, a quarter wheel to the right, (or left,) and then all move straight forward.

In a charge in line, 500 paces are passed over at the walk and trot, 200 at the gallop, and 100 at the charge.

Sometimes the 4th platoon charges in one rank, in open order, and is supported by the remaining platoons in close order.

Again, the 1st, 2d, and 4th platoons charge helter-skelter, as foragers, and are supported by the 3d platoon, which remains in close order.

SKIRMISHERS.

The 4th platoon is usually employed for skirmishing-duty.

At the command of the captain the chief of this platoon conducts it to a point from 150 to 200 paces in front of the centre of the squadron, and there halts it. The four left files (or as many more as may be directed) return sabres, or rest lances, and at once dash out about 100 paces to the

front at a gallop, and there form in one rank with sufficient intervals to enable them to cover the whole front of the squadron; the rear-rank men are on the left of, and near to, their front-rank men.

One man of each file must always have his piece loaded.

They halt while firing, but keep moving while loading, describing a figure ∞ as they ride.

Since the skirmishers are intended to cover the squadron, they, as well as the rest of the platoon, must conform to all its movements.

When any party of cavalry is obliged to dismount to fight on foot, the Nos. 3 of each rank remain mounted, and hold the horses of Nos. 1 and 2.

The formation of a regiment deployed is with its 4 squadrons in line, with intervals of 6 paces; the standard on the right of the 3d squadron; the colonel, accompanied by the adjutant and 2 trumpeters, 60 paces in front of the centre; the junior field officer 20 paces in rear of the centre of the regiment.

A regiment may be formed in column by squadrons closed in mass, the distance being platoon front *plus* 6 paces; by squadrons with full distance; by platoons doubled on the central platoons; and in line of columns of squadrons by platoons.

A regiment being in line, the front is changed by squadrons: *e.g.*, to change front forward 90° on the 1st squadron the 1st squadron wheels to the right and halts, the other squadrons each make a half wheel to the right, then march straight forward until they arrive opposite their respective places in the new line, when they again half wheel to the right into their places.

To deploy a close column the leading squadron halts, the others wheel by platoons to the left, (or right,) march straight forward until they arrive opposite their places in line, when they wheel by platoon to the right, (or left,) and advance in line to their posts. This deployment is executed at a trot.

During a charge in line the standard-bearer falls back into the rear rank.

If the ground over which a charge is to be made is not known, an officer is sent forward to examine it and report to the colonel.

The entire force of a regiment should not charge, but some of the flank platoons should be held in reserve.

Sometimes the 4th platoons of all the squadrons, or one entire squadron, charge as foragers, supported by the rest of the regiment in close order.

Sometimes the 1st, 2d, and 4th platoons of all the squadrons charge, while the 3d platoons, under the command of the junior field officer, are held in reserve.

The charge by echelons is also employed.

A regiment being formed in column by squadrons, there are two methods of employing it in a charge:

1st. The column being right in front, the 4th squadron leaves the column and forms, the 1st and 2d platoons on the right, the 3d and 4th on the left flank of the column, the commandants of these platoons being on the alignment of the file-closers of the 3d squadron; the column then moves off at a trot, next at a gallop; as soon as it takes the gallop the 1st squadron charges; when the colonel gives the command, *halt*, the 4th squadron charges as foragers.

2d. The column being right in front, moves forward at a trot; the 1st squadron then charges, and afterwards retires by the flanks of the column to the rear, where it re-forms; the other squadrons then charge in succession in the same manner.

If skirmishers are to be deployed to cover the regiment, either the 4th platoons of all the squadrons, or one entire squadron, are detailed for the purpose.

If the regiment is to dismount to fight on foot, it is effected upon the principles explained for a single squadron.

In a brigade deployed, the interval between the regiments is 12 paces. The general of brigade is 100 paces in front of the centre, and is accompanied by the brigade adjutant and two trumpeters.

HORSE EQUIPMENTS.

The cuirassiers use a heavy saddle, with a low pommel and cantle; it is covered with leather, and presents nothing worthy of imitation.

The rest of the cavalry have the Hungarian saddle; it differs from the Austrian model principally in the manner of attaching the equipment; the forks are permanently bolted to the bars; there is more iron-work upon it, and small skirts are attached to it.

Eight sizes of trees are made; the average weight of the bare tree is seven pounds.

The English saddle is the uniform for officers; they use a girth of hemp cords.

For the men, the valise is replaced by a flat bag, opening in the middle of the lower side, which contains the clothes, and is laid on the tree, under the schabraque, the man sitting on it.

The pouches are large and heavy; they are attached to the saddle by spring hooks, and contain many of the necessaries.

The pistol-holster is in one of the pouches; also a pocket for extra cartridges; to one pouch the hatchet is attached.

The cloak and forage-bag are strapped to the cantle; the kettle, in a leather case, is attached to the left side of the hind fork. The schabraque is of blue cloth, with a lining of coarse linen; it has pockets in the lining.

Cruppers and breast-straps are used; the surcingle is of leather, and fastens in the Mexican style; the girth is also of leather, about 3½ inches

wide, and with a large buckle; it is in two parts, and is attached to the bars by thongs of raw hide.

The saddle-blanket is 8′ by 6′ 3″; it is folded in 12 thicknesses.

The forage-bag is of white linen.

The forage-cord has an iron ring at one end.

The nose-bag is of coarse linen, the bottom bound and crossed with broad linen tape.

The curry-comb is 6″ by 4″, with four rows of teeth; one pattern, for field service, has a strap attached to the back, instead of a handle, the hand being run under the strap.

The mane-comb is of horn; metallic combs have been tried and abandoned.

The shoe-pouches, one on each side of the hind fork, contain, each, 1 fore and 1 hind shoe, as well as 16 common and 4 *ice* nails, in a straw cushion.

The stirrups are of steel, and roughly made.

A hemp surcingle is used in the stable.

Two bits are used, both of steel; the curb has straight branches, and a heavy steel chain.

The headstall is single; the curb is buckled to the cheek-pieces; near its lower end a strap about 2″ long is sewed to one side of each cheek-piece; the snaffle is attached to a ring at the end of this strap by a chain and toggle.

The curb-reins are 4′ long. No martingale is used.

The halter presents nothing peculiar: the rope is 6′ long, and is either of hemp or hair; in garrison a chain is sometimes used. By attaching a snaffle-bit and rein, the halter serves as a watering-bridle.

The Russian bit is being tried: in this experiment the snaffle fastens to the halter-headstall by a chain and toggle, while the curb-headstall, which is very light, passes through loops on the halter.

All articles of each set of equipments are branded with the number of the set.

ARMS AND ACCOUTREMENTS.

Cuirassiers, sabre of the old French cuirassier pattern; 20 men in each squadron have a smooth-bore carbine, with a barrel 15″ long; the rest of the men a pistol, with a 9″ barrel.

Dragoons, light-cavalry sabre, blade 32″ long, and 1½″ wide at the shoulder, considerably curved, guard and scabbard of steel; sergeants and trumpeters, 1 pistol each; 50 men in each squadron have a rifled carbine, the rest a smooth-bore carbine.

Lancers, sabre as for dragoons; lance 10½′ long; firearms as for cuirassiers.

Hussars, armed as described for dragoons.

The cuirassiers have metallic helmet, breast and back pieces.

The sabre-belt is an ordinary waist-belt with slings; it fastens by means of an S hook.

The cartridge-box is attached to a shoulder-belt; it contains 18 rounds; it is filled by a wooden block, in which a hole is bored for every cartridge.

The carbine, or pistol, rammer is attached to the cartridge-box belt by a thin strap, the rammer being slipped through two loops on the cartridge-box.

The carbine-sling is not peculiar.

On the march the carbine is carried in a boot, the small of the stock being strapped to the pommel.

UNIFORM.

The dragoons wear a helmet of black leather, surmounted by a brass spear-head.

The lancers have the ordinary lancers' cap, the czapka.

The hussars, a cylindrical shako of fur, without visor.

The forage-cap has no visor.

The clothing is of excellent material, and is well made; it is made up in the regiments.

A short frock-coat is worn by all the cavalry.

Coat and pants are lined throughout.

The pants are re-enforced with black leather, and are split about 6″ from the bottom, along the outer seam, the slit fastening with hooks and eyes; straps of leather are sewed to the pants.

Boots are worn under the pants; steel spurs are permanently attached to the boots.

The overcoat has a large rolling collar, and no cape; it is of a dark-gray color, nearly black.

The stock is of bombazine, lined with linen; it has a flap in front, and fastens by means of a buckle.

The buttons are plain.

Shirts, socks, and cloth mittens are issued.

HORSES.

There is a central commission at Berlin charged with the regulation of the purchase of horses.

For this purpose, the monarchy is divided into three districts: 1st, the country east of the Vistula; 2d, that from the Vistula to the Elbe; 3d, the Rhenish provinces.

There is a sub-commission for each of these districts, and several remount depots.

The horses are purchased between the ages of 3 and 7, the preference

being given to young horses, which remain at the remount depots until they are 4½ years old.

The horse is supposed to give 9 years' service, on the average; therefore, each regiment is annually supplied with remount horses to the number of one-ninth of its total strength.

As an instance of the price of horses, it may be mentioned that in 1854, in the province of Pomerania, 733 horses were offered to the subcommission, 311 of which were purchased; the average price paid was $85, the highest price $137.

Prussia is not now obliged to import horses for the army.

The horses are branded with the initials of the name and the number of the regiment to which they belong, also with the sign of the province where purchased.

The horses are generally good, but by no means extraordinary.

The minimum height of horses for the garde du corps is.....16 hands.
cuirassiers is.....15 hands 2 inches.
light guard and lancers is...15 hands ½ inch.
dragoons and hussars is.....14 hands $3\frac{6}{10}$ inches.
The minimum height of artillery draught-horses is.....16 hands.
saddle-horses is.....14 hands $3\frac{6}{10}$ inches.

From 2 to 4 spare horses are allowed each squadron.

Every lieutenant of cavalry receives a public horse once in 5 years; if he rides the same horse for that time, it becomes his private property at the expiration of the period, unless he is promoted to a captaincy in the interim.

If he does not avail himself of this privilege for 5 years, he receives a compensation of from $100 to $110 at the expiration of that time.

If he loses his public horse in time of war, he receives a new one, and is credited for the time he rode the first.

It is the duty of the colonels to see that the officers are properly mounted.

In time of war, or in case of pressing necessity, the laws allow the government to seize the horses of citizens for the use of the army; the owners are paid a price determined by a board of officers.

RATIONS OF THE MEN.

In garrison, bread only is issued in kind, 1½ pounds to the ration; it must have been baked at least 24 hours before issue, and is issued every 4 days. The rest of the food is purchased, by means of a small daily allowance in money, by a commission consisting of the colonel, 1 captain, 1 lieutenant, and 4 sergeants.

The principal food is soup, with a small slice of meat.

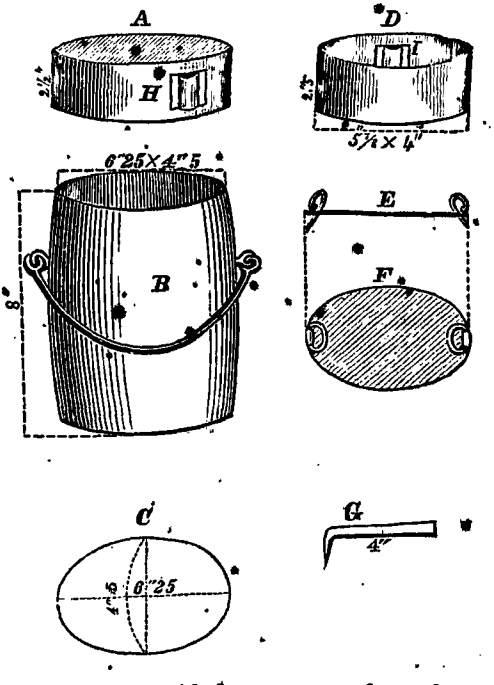
No coffee is issued; brandy or wine in lieu of it.

The largest field ration consists of:

½ pound of meat, or ¼ pound of salt pork; 2 pounds of bread, or 1 pound of biscuit; ½ pound of rice, or ¼ pound of peeled barley, or ½ pound beans or peas, or ½ pound of meal, or 1½ pounds of potatoes; ½ pint of brandy, and salt.

The bread is generally carried in the forage-sack; the brandy in a flask.

The annexed sketch gives the form and dimensions of the kettle carried by each man in the field; it is in a strong leather case, strapped to the left side of the hind fork; the kettle is of stout tin.



A is the cover.

B, the kettle.

C, plan of the bottom.

D, pan, fitting in B.

E and F, section and plan of cover, with rings to serve, as handles, and small tin springs to keep it in place; it is carried in the top, (A.)

G, handle of top (A) when used as a stew-pan, slipping into the receptacle H; it is 4" long, and is carried in D, slipping into I.

In garrison, mess-rooms are sometimes provided; each man has a bowl and wooden spoon; the bread is kept in the quarters, each man having a cupboard with a lock and key.

QUARTERS.

As the quarters have been described in treating of the infantry, it is only necessary to say here that they are usually in separate buildings from the stables.

The horse equipments are kept in the quarters.

FORAGE.

The ration is of two kinds, the heavy and the light; each of these varies according to circumstances as follows:

Heavy ration,	in garrison.....	9	quarts of oats,	5	pounds of hay,	8 pounds of straw.
	on march, in peace	10½	"	3	"	4 "
	in the field, in war	11¼	"	3	"	4 "
Light ration,	in garrison.....	7½	"	5	"	8 "
	on march, in peace	9	"	3	"	4 "
	in the field, in war	10	"	3	"	4 "

With the consent of the minister of war, the ration as given above may be changed, as follows: the oats may be replaced by rye, barley, biscuit, hay, or straw, at the following rates: for each quart of oats 0.56 quart rye, or 0.8 quart barley, or ⅔ pound biscuit, or 2⅔ pounds hay, or 5⅓ pounds straw; hay may be replaced by straw at the rate of 2 pounds of straw for 1 pound of hay.

The straw, as given above in the garrison ration, is one-half fed, the rest used for litter.

The *heavy ration* is issued to the cavalry of the guard, the horses of the riding-school, the horse artillery of the guard, the draught-horses of all the artillery, and the cuirassier regiments.

The *light ration* is issued to all other horses, except that the lancers receive ¾ quart of oats more than the quantity specified above for the light ration.

From the day of their purchase until joining their regiments, the remount horses receive from 7½ to 9 quarts of oats, 7 pounds of hay, and 4 pounds of straw per diem.

STABLES.

The new and best stables are of brick, of one story, with a loft above. They have a central passage-way, with a row of stalls on each side, and usually accommodate the horses of an entire regiment.

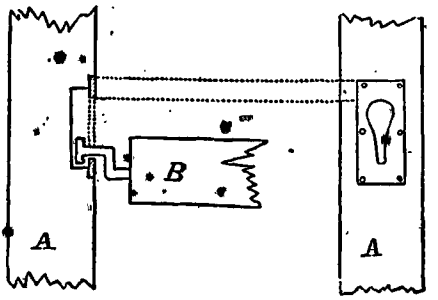
In some cases, the stables are built on three sides of a rectangle; each of the short sides for 1 squadron; the long side for 2 squadrons, and having a riding-house in the middle; the barracks, detached, form the fourth side. In other cases, the long side is for 1 squadron and the riding-house, while there is a perpendicular wing for each of the other squadrons.

The stalls are 5′ 2″ wide, 9′ 6″ long to the heel-post, 1′ thence to the drain; the central passage-way is 12′ 4″ wide; the ceiling 15′ high. The interior of the stables is plastered, and the communication with the loft is by means of trap-doors in convenient places for throwing down the hay.

The passage-way is paved with cubical blocks of stone; the stalls with bricks set on the long edge.

The stalls are separated by swinging bars suspended by a hook at the head of the stall and by a stem and socket in rear, as shown in the sketch on page 305, in which A is the heel-post, B the swinging bar.

For every third stall there is a window 3′ square, the sill being 8′ 6″ above the floor; above the other stalls are ventilators, 10″ square, that can be opened and closed by means of iron rods. The mangers are of cast iron, 2′ long, 11″ wide, 8″ deep; the top 4′ above the floor. They are supported by two iron stanchions under the middle; to the one nearest the horse he is attached by a sliding ring.



Each horse has a separate iron rack, the bottom of which is 2′ above the manger; it is 2′ 6″ long and 18″ deep. The hay is put in from below, after being sorted and cleaned from dust.

There are pumps and vats in the stables.

From 1 to 4 days' forage is kept in the loft, there being forage-magazines close at hand.

A board is nailed across from one heel-post to another, about 7′ above the floor; on this is painted in large figures the number of the stall, and on a black-board as follows:

Private John Smith.—Equipment No. 162.

Name of horse.	Year of remount.	Sex.	Height.	Age.
Ziethen.....	1853	Male.....	4′ 11″	6

The age is that at the time of his joining the regiment, or at the year of remount.

A black-board is hung up in the stable of each squadron, on which are inscribed in chalk, daily, the names of the stable-guard, the number of government horses for duty, the number of officers' horses for duty, the number and names of the sick horses.

At convenient places there are banquette beds for the stable-guard.

Lanterns are swung from the ceiling along the middle of the passage-way.

The horse-hospital and the shoeing-shop are in separate buildings, the former being enclosed by a wall.

In the stable-yard racks are provided for airing the litter.

STABLE-DUTY.

The stable-guard consists of 1 corporal and 8 men per squadron; they are on duty for 24 hours, sleep in the stable, feed the grain, and are re-

sponsible for the police and order of the stables between stable-calls. Two of the number must be on duty and awake day and night.

The stable-guard and the stable-duty generally are under the direction of the squadron officer of the day, the orderly sergeant and the squadron sergeant of the day.

The ration of oats is divided into five equal portions. One of these is given the first thing in the morning; then the horse is cleaned and watered; after this, another portion is given; about noon the horse receives another portion, and is again watered; soon after this he is again rubbed down, and after that receives another portion; a little before dark he is again watered, and receives the last portion.

The straw is generally chopped and fed with the oats, the greater part being given with the last portion.

The hay is fed one-half in the morning, the rest after the last evening feed.

The grain is fed by the stable-guard as follows: a box mounted on wheels contains the feed, and is wheeled along by one man; two others, having dish-shaped baskets, each receive from the corporal the portion for 1 horse, and pour it in the mangers on each side of the passage-way as they proceed. The orderly sergeant and the sergeant of the day superintend.

The men clean out the mangers of their own horses before the feeding.

Each man provides his own horse with hay, which is shaken and freed from dust, sticks, weeds, &c., before being placed in the racks.

At stable-call, each man polices the stall of his own horse. Birch brooms, wooden shovels bound with iron, and light forks are used in policing the stables.

For every 10 horses there are allowed 1 bucket, 1 sieve, 1 shovel, 1 fork, and from 1 to 2 brooms.

The horses are sometimes blanketed in the stables.

FIELD SERVICE.

In the field, the following is the allowance of transportation for a regiment of cavalry:

1 four-horse wagon, containing regimental chest	300	pounds weight.
Paymaster's and other regimental books	40	" "
Adjutant's desk	40	" "
Officers' mess-chest	100	" "
" portmanteaus (captains 55, lieutenants 45 lbs., each)	1,340	" "
Total weight	1,820	" "

1 two-horse wagon, containing armorer's tools	220	pounds	weight.
Saddler's tools	110	"	"
Baggage of the surgeons	100	"	"
Medicines, &c.	252	"	"
Total weight	682	"	"

Each squadron has a two-horse cart, loaded as follows:

Officers' mess-chest	30	pounds	weight.
Farriers' tools	60	"	"
Spare equipment	173	"	"
Blankets for sick men	27	"	"
Baggage, &c., of orderly sergeant	20	"	"
Baggage, &c., of the medical *personnel*	60	"	"
Money, when on detachment	50	"	"
Total weight	420	"	"

So long a time has elapsed since the Prussian cavalry have seen any serious field service on a large scale, that they have but little more than theory and remote traditions in this regard; it is probable that we have but little to learn from them on this point.

Tents are not used in the Prussian army; the troops being placed in cantonments, huts, or bivouacs.

The huts are of wood or straw, and either square or round: the square huts are 15′ square in the interior, and are for 14 men with their equipment; the round huts are 20′ in diameter, and contain 18 men with their equipment.

The round huts are 36, the square 28, paces apart, from centre to centre.

The huts of each squadron are in two rows, facing each other and perpendicular to the front of the camp; the width of the street varying with the strength of the squadron.

The picket-ropes are stretched 3 paces in front of the lines of huts, and parallel to them; they are attached to picket-pins, driven firmly into the ground, 2 paces apart; 4½ paces in rear of the picket-rope, another rope is stretched, parallel to it, to enclose the horses. The baggage is in rear of the colonel's hut; the kitchens 25 paces in rear of the baggage.

The kitchens are ditches 15 paces long, and 2′ deep, one for each squadron.

The latrines are 125 paces in rear of the kitchens; those for the men are ditches 30′ long and 3′ deep, which are renewed every 2 or 3 days in summer.

A regiment of cavalry may bivouac either in line or with the rows of horses perpendicular to the front, or in column by squadrons with half distance.

1. BIVOUAC IN LINE.

Each squadron is allowed a space 75 paces long, by 30 paces deep, with intervals of 4 paces between the squadrons.

The kitchens are 10 paces behind the bivouac of the men; the squadron officers 5 paces in rear of the kitchens; the staff 10 paces in rear of the squadron officers.

The parade-ground is in front of the bivouac, and must be at least 30 paces deep.

A bivouac of this kind occupies a front of 312 paces, and a depth of 80 paces, counting from the bivouac of the front rank to the baggage-wagons, inclusive.

2. BIVOUAC WITH PICKET-ROPES PERPENDICULAR TO THE FRONT.

Each squadron is allowed a front of 50 paces, and a depth of 75, with intervals of 10 paces between the squadrons. The arrangement of the kitchens, &c., is similar to that in the preceding case.

The parade-ground is in front of the camp, and is 50 paces deep.

A bivouac of this kind occupies a front of 230 paces and a depth of 125, between the same points as in the last case.

3. BIVOUAC IN COLUMN BY SQUADRONS.

Each squadron is allowed a front of 75 paces, and a depth of 20, with distances of 10 paces between the squadrons.

The kitchens are 10 paces from one flank of the column, the squadron officers 5 paces beyond the kitchens; the colonel and staff 20 paces behind the last squadron. The parade-ground is on the opposite flank from the kitchens; a free space 50 paces deep is left in front of the bivouac and parade-ground.

This bivouac occupies a front of 165 paces, including the parade-ground, and a depth of 145 paces between the same points as in the last case.

In bivouac the sabres are stuck in the ground 3 paces in front of the picket-ropes; the shako and cartridge-box hung on it.

The horse equipments are placed 3 paces in rear of the horses.

In time of peace, cavalry usually march 14 miles each day, resting every fourth day. In good weather, and over good roads, they may march 28 miles or more; but such long marches are to be avoided, as injurious to the horses and equipment.

On good roads, and in good weather, the march is usually at the rate of 3 miles per hour; in a rough, broken country, about one-third more time must be allowed.

To place a squadron on a railway-train requires about 2 hours; about 1 hour is needed to take them off.

2 locomotives and about 32 wagons are needed to transport a squadron.

SCHOOL OF EQUITATION, AT SCHWEDT.

Lieutenants and non-commissioned officers of cavalry and artillery are sent to this school for instruction in equitation.

The course lasts two years; there is but one class of officers; that is, they all enter and leave the school at the same time, an entirely new set entering every second year; one-half of the non-commissioned officers leave every year.

One officer is sent from every brigade of cavalry, and one from every two regiments of artillery. Two non-commissioned officers are sent from every regiment of cavalry and of artillery.

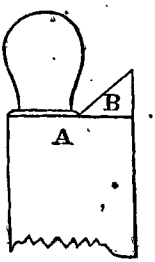
Each officer brings 2 private horses with him, the school furnishing him with a third; the non-commissioned officers come without horses, and take back to their regiments the horse each one rode during the last year.

The school consists of 1 field officer as director, 3 captains, or lieutenants, as instructors, 2 riding-masters, 24 lieutenants and 94 non-commissioned officers as pupils, 1 paymaster, 1 orderly sergeant, 2 veterinaries, 1 quartermaster, 1 horse-breaker, 57 privates as grooms, 27 privates as officers' servants.

The stables and riding-halls are ample, and well arranged.

The riding in the open air is performed on a drill-ground some distance from the town; here they leap ditches, hurdles, &c., fire with the carbine and pistol, run at the heads, &c.

The annexed sketch explains the manner of attaching the head to the post; it avoids the necessity of keeping a man at the post to replace the head. The head is shaped as in the figure, and is partly covered with leather; at A it is secured by a leather thong, so that when struck it moves around that point as a hinge, and is stopped by the triangular piece of wood, B; it thus resumes its first position. They cut at balls on the ground on the right, never on the left.



The pupils are taught to vault on and off the horse at a gallop. Their time is fully occupied by constant exercises during the day.

The usual continental system of employing kickers is followed here; for this purpose two or three horses are taught to kick and plunge in every possible way, when tied up close to two posts; the recruits are mounted on these, without stirrups, and hold on, if they can, by means of a couple of straps attached to the pommel.

The system pursued in breaking young horses is one of extreme care and gentleness; violent measures are never resorted to; considerable attention is paid to rendering the muscles of the head and neck pliable, in order to gain full control over the horse; this, however, must not be understood as indicating approbation of the Baucher system, which here, as well as elsewhere, has been tried and found to be unfit for cavalry purposes.

THE VETERINARY SCHOOL AT BERLIN.

At this institution about 80 pupils are instructed as farriers and veterinaries for the army, in addition to a number of civilian pupils.

It is very similar to the veterinary school at Vienna, described under the head of the Austrian cavalry; but not quite so extensive, and perhaps not so perfect.

It has lecture and dissecting rooms, operating-halls, museums of comparative anatomy, &c.

The stables accommodate about 80 horses, and are arranged for from 4 to 6 horses in each division.

The interior arrangement of the stables presents nothing peculiar, except that there is but one row of stalls in each. There are boxes, in separate stables, for glandered horses. The Russian steam-bath is used in the establishment, but it is stated that the result is not generally beneficial; it has been applied in cases of rheumatism, colic, &c.

The horseshoeing department is under a special instructor. The shoes and tools present nothing new or worthy of imitation, both being heavy and awkward.

The shoes have no groove, but the nail-holes are countersunk; there are four nails on each side; four sizes of shoes are used in the cavalry.

The method of shoeing is similar to that pursued in Austria,—one man holding the horse, another his leg, a third putting on the shoe.

A vice is made use of in teaching the pupils to set and nail on a shoe; the hoof and pastern of a horse recently deceased are placed in this vice, which is attached to a bench, and so arranged as to admit of being thrown into various positions.

Cows, pigs, dogs, and cats, are treated in this institution. The horses of civilians are cured and shod upon moderate terms, in order to secure the necessary amount of practice for the pupils.

The Prussian military literature is very rich, and is well worthy of study.

Among the works relating to cavalry, which may be consulted with advantage, are—

Kalkstein on the Prussian Army; Die Preussische Armee, nach ihren reglementarischen Formen und Einrichtungen, &c., von R. v. Kalkstein;

Mirus' Aide-mémoire; Hülfsbuch beim theoretischen Unterricht des Cavalleristen, von Mirus—this gives the interior service in great detail.

Witzleben on Army Affairs; Heerwesen und Infanteriedienst der Königlich Preussischen Armee, von A. von Witzleben; Buschbeck's Field Pocket-Book; Preussisches Feld-Taschenbuch für Offiziere aller Waffen, von F. Buschbeck; the Hand-Book of Field Service for Cavalry Officers, Handbuch des Felddienstes für Cavallerie-Offiziere, von einem Cavallerie-Offizier.

Schimmel's Partisan Warfare; Compendium des kleinen Krieges, für Infanterie- und Cavallerie-Offiziere, von Friederich Schimmel.

Seidler on Breaking Horses; Seidler, Bearbeitung des Campagne-Pferdes, and Seidler, Dressur difficiler Pferde.

Prof. Hertwig's Works on the Veterinary Science; Praktisches Handbuch der Chirurgie für Thierärzte; Taschenbuch der gesammten Pferdekunde; Praktische Arzneimittellehre für Thierärzte, von Dr. C. H. Hertwig.

All these works are to be found in the library of the War Department.

AUSTRIAN CAVALRY.

ORGANIZATION.

In the Austrian army there are 16 regiments of heavy cavalry—*i.e.* 8 of cuirassiers and 8 of dragoons; and 24 of light cavalry—*i.e.* 12 of hussars and 12 of lancers.

Each regiment of the former consists of 6 active squadrons, the men and horses being chiefly from the German provinces.

Each regiment of light cavalry has 8 active squadrons; the men and horses of the hussars being Hungarian and Transylvanian; those of the lancers are, for the most part, from Poland.

Each regiment has a colonel, one field officer for every two squadrons, an adjutant, paymaster, quartermaster, and judge advocate.

The squadron is the unit for the administration and interior service; the division of 2 squadrons commanded by a field officer is the tactical unit. Each division has a standard.

A squadron of heavy cavalry consists of:

1 captain commanding, called 1st captain.
1 2d captain.
2 lieutenants.
2 sub-lieutenants.
2 sergeants.
12 corporals.
1 trumpeter.
1 saddler.
1 veterinary.
162 men and 150 government horses.

A squadron of light cavalry consists of:

1 captain commanding.
1 2d captain.
2 lieutenants.
2 sub-lieutenants.
2 sergeants.
12 corporals.
2 trumpeters.
1 saddler.
1 veterinary.
200 men and 201 government horses.

In addition to the numbers given above, 2 officers' servants are allowed to each squadron.

The general rule is, that about 10 per cent. of the men are dismounted; it is stated by some of their cavalry officers that 20 per cent. would, in time of war, be a better proportion.

The dismounted men remain at the depot, or ride in the wagons; they never use the horses of the other men, and do all the dismounted duty, take care of the led horses, those of the sergeants, &c.

Each regiment has a depot, which, during peace, consists of 30 men; in time of war, it has the same strength as the other squadrons, and supplies men to fill the vacancies which occur. The junior 1st captain of the regiment usually commands the depot, but after 2 years' service with it he may demand to be replaced by a senior 1st captain.

In time of peace, the depot is usually with the head-quarters of the regiment; during war, it is placed at some spot convenient to the line of operations of the regiment. In war, the remount horses are kept with the depot until they can join the service squadrons. During the Hungarian war, there was one instance when there were 1,000 horses with the depot of a regiment of lancers which formed part of the garrison of the besieged place of Temesvar.

TACTICS AND INSTRUCTION.

In order to give an idea of the general tone of the tactics, a few extracts will be given, relating chiefly to the seat and the early instruction of the recruits.

For the cavalry, equitation is of the greatest importance.

It consists not only in the ability to sit the horse, but also in knowing how to conduct and use him under all circumstances.

The object of the cavalry instruction is to accomplish this purpose in the shortest time, and in the simplest manner, suited to the mental and physical qualities of the soldiers.

Therefore, no intricate system of equitation will answer the purpose; although the instruction of the non-commissioned officers may be carried further than that of the privates.

The instruction in the riding-school is intended to give the rider sufficient skill to enable him, by means of the various aids, to control the horse, and cause him to execute all possible movements, and at the same time to give such a position to the upper part of the body and the arms as will cause the rider the least fatigue, and enable him to use his weapons with the greatest effect.

It is an absolute rule that the recruit must never be passed from one lesson to another until he fully comprehends, and can execute well, all that precedes.

Good judgment, tranquillity, patience, and mild treatment, are the most important qualities in an instructor.

The strength of neither horse nor man should be over-taxed.

An experienced and skilful instructor will always go to work with circumspection, and never allow himself to be induced by passion to demand more of man or horse than they are in condition to perform or the end in view requires.

The instruction must progress only according to proficiency; therefore, any practice in the various turns, or in passaging, while the requisite preliminary instruction is wanting, is not only useless, but injurious.

Besides teaching the recruit the ordinary care of his horse, he must also be made familiar with the different parts of his equipment, and be taught how to saddle, pack, and bridle his horse.

In addition, before being taught to ride, he must receive some instruction in the position of the soldier, the facings and marching on foot without weapons, since he acquires thereby a more unconstrained and regular position, which facilitates the instruction in riding.

Finally, there are some exercises on foot which have special reference to the position of the rider. Among these are: To throw back and lower the shoulder-blades by crossing the arms behind the back; turning the wrists with the fingers closed; to stand on an even floor, with the feet parallel and the thighs apart, then to lower and raise the upper part of the body by bending the knees; by this means the necessary flexibility of the knees and the vertical position of the haunches are obtained.

The recruit being on foot, the reins are placed in his hands, and he is taught how to hold them; the use of the legs is explained to him at the same time.

The recruits will also be greatly benefited by being frequently shown a well-broken horse, fully packed, and mounted by a well-drilled soldier. The time bestowed upon these preliminaries will not be thrown away, but will be found to be amply repaid by the increased facility with which the recruit will learn his duty, and the smaller amount of explanation required from the instructor.

Quiet and well-broken horses must always be given to recruits.

Their instruction must never commence without stirrups, but they will ride without stirrups only after they have acquired a firm, sure seat; it is entirely inadmissible for the recruits to ride without stirrups in the lessons with the longe.

All movements will be first taught at a walk; afterwards at the trot and gallop.

The walk must be lively, free, and decided.

The trot must be decided, easy, united, uniform, long, and sure.

The gallop should be calm, united, long, and low.

A good instructor can drill 3 or 4 recruits; but the same instructor should always drill the same men.

The intelligence of the instructor, the progress of the recruits, and the pressure of circumstances, must determine how long each lesson is to be dwelt upon, and when to pass from one lesson to another.

OF THE SEAT.

On horseback, the body has three points of support,—the extremities of the haunch-bones and the end of the spine; therefore, the haunches form the foundation of the seat, and on their direction depends the position of the rider.

When the recruit mounts for the first time, his haunches, thighs, the lower part of the legs, and the upper part of the body, must be placed in position for him.

The haunches must be square on the saddle, and perpendicular to it, so that both haunch-bones may rise alike, and the end of the spine be exactly over the middle of the saddle. If the haunches are leaned too far back, the waist is carried with them, the upper part of the body bent, and the thighs raised; if the haunches are leaned forward, the upper part of the body loses its steady position, requires an effort to preserve its equilibrium, and the thighs are thrown too far back.

The thighs must be so much turned out, and thrown forward with the knees, that they may lie flat on the saddle. The extent to which this may be carried is determined by the prescribed perpendicular position of the haunches; if the thighs are thrown too far forward, the haunches will lean back; and if the thighs are too far back, the body is raised from the saddle. The lower part of the legs, from the knee down, must hang along the sides of the horse quite naturally, and without constraint: they should not be opened out, nor strongly raised or pressed together. The whole surface of the foot must rest on the bottom of the stirrup. The heel must be dropped so as to stretch the muscles of the thigh, but not so much as to stretch the calf of the leg or the ankle-joint; for upon the mobility of the ankle depends, not only keeping the stirrup, but also the falling back of the thigh into its proper place after each step of the horse. Although the whole inner surface of the thigh must be flat on the saddle, it must not be stiff and constrained.

When the lower part of the leg hangs naturally, the toe is a little turned out.

The foot is thrust into the stirrup as far as the ball of the great toe, and must rest lightly on the bottom of the stirrup. The vertical plane through the centre of gravity of the body must pass through the heels, by which means the rider has more power, and the knees produce more effect.

In riding without stirrups, the thighs must be well extended and the

knees lowered, so that the rider may not cling to the horse with the calves, and may have the buttocks firmly on the saddle. The spine should be vertical above the hips. The back of the rider must be elastic, but firm; because this is necessary in using his weapons, and also to break the violence of the blow caused by the motion of the horse, particularly at a trot, and the rider is thus prevented from being tossed up from the saddle, shaken, or strained. A firm back is also necessary to resist the forward motion of the horse; and it is to be borne in mind that the peculiar construction of the joints of the spine admits of a forward motion to a much greater extent than in the opposite direction. Since the rider's hands are in absolute connection with the mouth of the horse, he is pulled forward by a horse heavy on the hand, or bearing on the bit, and finds himself unable to control such an animal unless his back is firm.

In long marches, the fully-armed soldier is, in consequence of fatigue, much inclined to throw the body forward.

These are good reasons for giving great attention to a good, upright, firm, and elastic carriage of the spine.

The shoulders must be sunk, and both blades thrown back, not to such an extent as to stretch the muscles of the breast, but merely to expand it freely; if the shoulders are raised, the breast is contracted, which is injurious to the health.

If one shoulder is lower than the other, the corresponding hip is drawn inward, and *vice versa*. The head must be carried easily on the shoulders, and the chin slightly raised: if the head is thrown too far back, the position of the spine is injured; if it is bent too far forward, the shoulders are rounded, and the rider's field of view contracted.

In the beginning the reins are placed in both hands, each rein passing through the whole hand.

The upper part of the arm, without pressing against the body, hangs near it, naturally, straight, and freely; if the elbow is pressed against the body, the shoulder is raised, and the position of the hand becomes constrained and unnatural; while, if the elbow is thrown out too far from the body, the hand becomes unsteady.

The forearm is lightly closed on the body, the hands so rounded at the wrists as to bring the thumbs opposite each other, and the little fingers somewhat towards the body; the hands are held, with the fists closed, 4 inches apart, and just above the pommel. The outer hand is a hand's breadth higher than the inner.

To acquire a light, firm hand, the *slight* pressure of the forearm against the body is necessary; for if the recruit endeavors to gain it by a strong pressure of the forearm against the body, he will acquire a stiff, heavy hand.

In sitting the horse the body is divided into two movable parts, and one

immovable: the movable parts are from the hips upwards, and from the knees downwards; the immovable part is the thigh, which, to a certain extent, is indivisible from the saddle, and should be as though glued to it.

The legs should hang with the full weight, so that the rider will neither stand on the stirrups, nor close the knees unnaturally, because this closing of the crotch throws up the knees, which fault increases with every motion of the horse, especially at a trot or gallop.

The chief departures from a regular seat are: the *split*, the *forked*, and the *stool* seats.

In the first, the legs and knees are thrown too far back; in the second, they are too nearly vertical; in the third, the hips are too far back, and the knees too far forward.

In the first lessons the recruit must be allowed to take the position which his build renders most convenient, and the instructor must not be rigid in his corrections, but allow the men to acquire confidence.

The shape of the saddle, and the form and gait of the horse, have a decided influence upon the seat; the Hungarian saddle is better than any other for giving an upright and handsome seat; but great care must be taken that the man does not acquire a split or forked seat.

A proper adaptation of man and horse, the discovery, judicious criticism upon, and removal of the causes which prevent the recruit from assuming a good seat, do more to hasten the instruction than loud hallooing and chasing about for hours.

The *walk* is the easiest gait for the rider, and the natural gait of the horse; it should be at the rate of about 120 steps per minute.

The *trot* is the most lasting pace of the horse, but the hardest for the rider; as it does much towards giving a good seat, the men should be much exercised at it; the common trot is at the rate of about 250, the trot out 300 steps per minute.

The *full gallop* is at the rate of 500 steps per minute; the hand gallop somewhat slower.

The *charge* is at the rate of about 600 steps per minute.

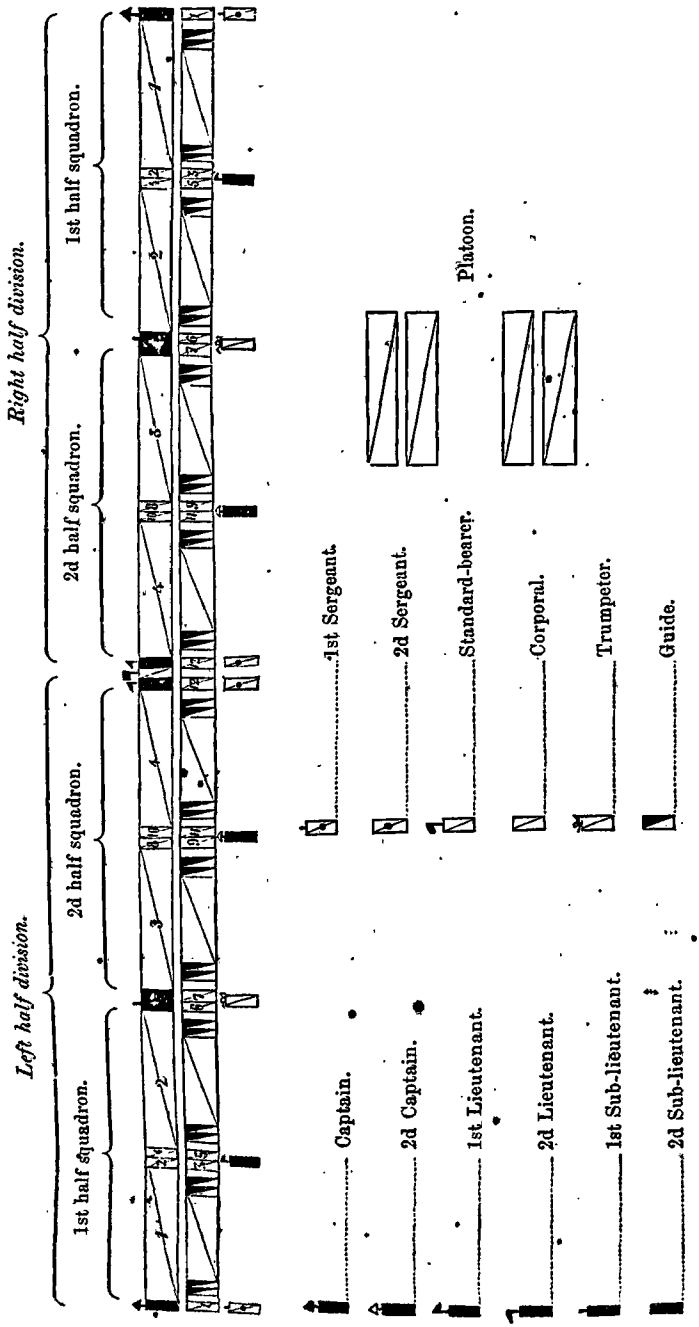
SWIMMING.

Since it is often necessary for light troops to swim their horses, they should be taught beforehand to throw the carbine over the shoulder, to allow the curb-reins to hang loosely, and to guide the horse by the snaffle, not straight across the stream, but a little against the current.

The rider must grasp the mane, and never look at the water, but at the bank, lest he become giddy.

In the event of being swept from the saddle, he can still keep above water by keeping hold of the mane; if he loses this advantage, he must endeavor to seize the horse's tail, and allow the animal to take him ashore.

The Division.



The figure on page 320 shows the formation of a division of 2 squadrons in line, with the posts of all the officers and non-commissioned officers.

It will be observed that there is no interval between the squadrons, and that the officers, with the exception of the file-closers, are in the front rank. In the different formations in column they retain their places in the ranks. The field officer commanding the division, accompanied by a trumpeter, is usually at a suitable distance in front of the centre, but may move wherever he deems best.

The interval between divisions is 18 paces.

The files are told off by fours, the column by fours being much employed; they also form column by twos, half platoons, platoons, half squadrons, half divisions, and divisions.

The front of a column of twos, &c., is increased in a manner similar to that pursued in the Russian tactics.

The column by half squadrons, and the column doubled on the centre half squadron, are the usual columns of manœuvre.

Columns are deployed by obliquing at the gallop; in the oblique each man brings his horse's head behind his neighbor's knee.

The order of battle of a regiment of heavy cavalry is a deployed line; the same formation is used when they are exposed to a heavy fire of artillery.

If a regiment of light cavalry forms part of a large body of troops, all four of its divisions are deployed in the order of battle, or when exposed to a heavy artillery fire; if the regiment is by itself, only three of its divisions compose the line of battle, the 4th being held in reserve, in column, 500 paces in rear of the centre.

A regiment of any kind, if not about to charge at once, or not under the fire of artillery, is formed in line of columns.

It being supposed that heavy cavalry is never out of reach of the support of other troops, the order of battle of a brigade of such cavalry is, with all its divisions deployed in one line.

The order of battle of a brigade of light cavalry is, one regiment with all its divisions deployed in line, the other formed in line of columns, with closed intervals, 500 paces behind the centre of the front line.

Independently of the reserves above mentioned, every body of cavalry which charges detaches, at the moment of taking the trot, a portion of its own force to secure its flanks and rear.

When a single division charges, the flank platoons fall out, and form, in columns by platoons, about 300 paces in rear of the centre; the captains on the flanks close in on the charging platoons; their whole duty is to watch and protect the flanks of the charging body.

When a regiment charges, the flank squadrons act in the same manner, but each squadron remains behind the flank to which it belongs.

In the charge of a brigade of heavy cavalry, the flank divisions fall out, and form in column by half squadrons behind the flanks of the line.

In the manœuvres of large bodies of cavalry, the Austrians form them in one line, throwing in advance the artillery, and a few squadrons, intended to make false attacks, and to clear the way for the main body: their reason for this is, that if the 1st line is broken it is very apt to carry the 2d with it.

DOUBLE COLUMNS.

A regiment of 4 divisions forms double column at full distance on the left half squadron of the 2d division, and the right half squadron of the 3d division, without closing the interval between these divisions; thus the 1st and 2d divisions are each in column left in front, the 3d and 4th right in front.

A brigade forms double column, at half squadron distance, on the left half squadron of the 1st regiment, and the right half squadron of the 2d; the 1st regiment being thus formed in column left in front, the 2d right in front; the interval between the regiments is not closed.

ARMS AND ACCOUTREMENTS.

Hussars.—Sabre, pistol, and carbine.

Lancers.—Lance, sabre, and two pistols; 16 men in each squadron have a carbine in the place of one of the pistols.

Cuirassiers.—Sabre and two pistols; 16 men in each squadron carry a carbine instead of one of the pistols; a metallic helmet and breast-plate, no back-piece.

Dragoons.—Sabre, pistol, and carbine; metallic helmet.

The light-cavalry sabre has a blade about 32 inches long, and not much curved; the scabbard and guard of steel.

It is rather heavy, and not particularly well balanced.

The heavy-cavalry sabre is somewhat longer and straighter.

The lance has a point 8 inches long above the knob; two iron straps extend some 3 feet down the shaft, which is about 9 feet long; the butt tipped with iron; pennon black and yellow; the ordinary lance-sling.

The ordinary carbine and pistol present nothing remarkable; the pistol has no strap to the butt.

The pistol-carbine has been introduced, and will probably supplant the old firearms. It is a long single-barrel pistol, with a carbine-stock, which is attached by two spring catches, so that it may be used either as a pistol or carbine; the stock, when detached, is carried in one of the holsters.

The barrel of this weapon is rifled, with 4 shallow grooves, having $\frac{3}{4}$

of a turn, and is 10½ inches long; it has the same calibre and lock as the new-pattern infantry musket, which does not differ materially from our own last model.

The sabre-belt is a plain leather waist-belt, with two slings, the shorter of which may be lengthened or shortened by means of a buckle; when the man is mounted, the length of this sling is such that the pommel of the sabre hangs about 1 inch below the waist-belt; on foot it is shortened, so that the sabre may not drag upon the ground. The belt fastens with an S hook for the officers, with a buckle for the men.

The carbine-sling is like our own; the pistol, or carbine, rammer is attached to a strap sewed to this sling.

The carbine is always carried on the sling, never being put in a boot nor attached to the saddle.

The cartridge-box is of plain black leather, and slung to an ordinary shoulder-belt; it contains 24 rounds, and has at one end a small compartment for cleaning-utensils.

The sabre-knot is flat, and of leather.

In the field the sabres are first ground, and afterwards whetted every two or three weeks. I was informed that although the steel scabbard dulls the sabre it is regarded as being, on the whole, better than wood, as not being so liable to injury by fire, kicks, &c.

In time of war the lance-points are kept sharp by filing. The firearms are only used on guard, vedette, &c., to give the alarm, it being taken as a maxim to trust only to the steel. There were several instances during the Hungarian war when the Hungarian hussars stopped to fire; the result invariably was that they were ridden over by the lancers.

Many of the officers think that the sabre should be more curved, as they prefer cutting to pointing.

It is a well-recognized principle that a dull sabre is entirely useless.

When lancers use the sabre, they rest the lance on the left arm.

No pains are spared to perfect the men in the use of their weapons; for they regard this and individual horsemanship as the most important qualifications of the cavalry soldier.

The hussars wear a sabretasche attached to the waist-belt.

HORSE EQUIPMENTS.

The Hungarian saddle is used in most regiments.

The figure on page 324 represents a side view of that saddle.

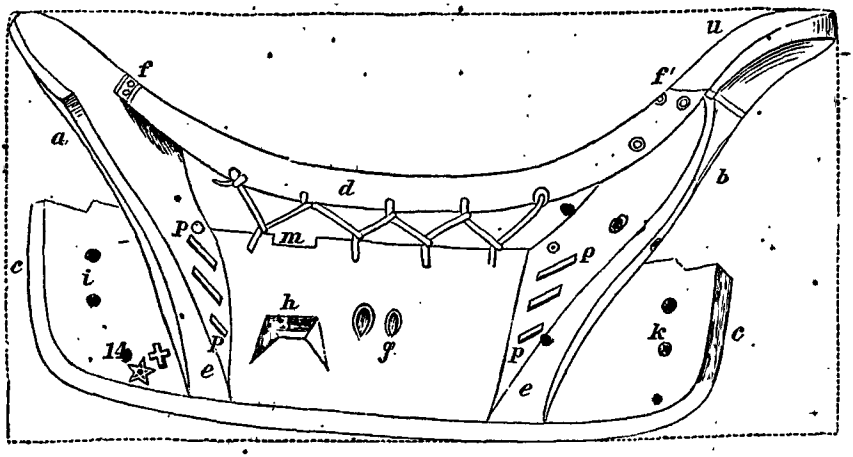
It is of hard wood, entirely uncovered, and consists of the *bars* (*c*); the front fork (*a*), the rear fork (*b*), and the saddle-seat or straining-strap (*d*). The ends of the forks (*e*, *e*) are let into mortises in the bars, and secured by raw-hide thongs passing through mortises (*p*, *p*).

The saddle-seat, or straining-leather, is a stout strap of leather, from

11½ to 13½ inches long, 4½ inches broad at the hind fork, 3½ to 4 in the middle, 2¼ to 3 at the front fork.

It is secured to the front fork by 4 flat-headed nails, a strip of leather being first laid over the end of the strap, as seen at *f*.

As the greatest strain comes upon its junction with the hind fork, it is secured to it differently. At each angle of the strap a stout thong is left when cutting it out; this thong is passed around the neck of the fork, and secured by a nail in rear; 5 flat-headed nails are then driven through the strap into the fork; under the head of each nail a round piece of leather is placed, to prevent the strap from being cut or worn; *f'* shows this arrangement.



The strap is attached to the bars by raw-hide thongs drawn tight, as shown in the figure. The forks are strengthened by light iron plates nailed to the front of the front fork and the rear of the hind fork.

The girth is attached to the bars by thongs passing through the holes (*g*). The stirrup-leathers pass through the mortises (*h*) and in the notch (*m*), a groove being cut in the under surface of the bar to receive the leather. The holes (*i*) are for the purpose of attaching the straps which secure the holsters; those at *k* for attaching the crupper. Near the upper end of each fork is a mortise; that in the front fork to receive the cloak-strap, that in the rear fork to receive the valise-strap.

On the front end of the right bar is the name of the horse; on the left bar is the number of the horse, (*e.g.* 14,) and the government brand.

The girth is of leather, 3½ inches broad, and fastens by a large buckle on the left side.

Crupper and breast-strap present nothing unusual.

The blanket generally used is a common white one, folded thrice lengthwise, and four times in the other direction.

A thick felt saddle-cloth, of one thickness, is used in the riding-schools, and is spoken of in the highest terms.

The men sometimes place a straw mat under the blanket.

Four sizes of saddles are issued to the light cavalry; six to the heavy.

The surcingle is of black leather, and is fastened in the Mexican style by a thong and rings.

The stirrups are of steel, with a large, round, flat bottom, and a flat, thin, and deep arch; in winter a little mat of straw is tied to the bottom of the stirrup, to protect the feet against the cold.

One shoe-pouch, of black leather, is carried attached to the right side of the rear fork; it contains 2 shoes and 32 nails; the nails are carried stuck in a species of circular pin-cushion made of plaited straw.

Lance-boot, small, and of leather; one on each stirrup of lancers.

The two holsters are strapped to the saddle; two slits in the schabraque, which may be closed by buckles, allow the pistols to be drawn.

Over the holsters are carried two bags of hair cloth, (called pack-tornisters,) about 1 foot square. In the left-hand bag are carried: razor, soap, shaving-brush, looking-glass in wooden frame, ($4\frac{1}{2}'' \times 3''$,) hair-comb, beard-comb, wax for the moustache, thread of various colors, case of needles, thimble, white wax, patches of cloth, buttons, pantaloon-straps, spare rowels, button-loops, scissors, a curved and a straight awl, shoemakers' thread and wax, colophony, sight-cover, clothes-brush, linen cap-cover, iron halter-ring with screw, whetstone, tooth-brush, towel, a pennon, $\frac{1}{4}$ lb. bread, some oats, and on the outside a forage-cap and tent-pin.

In the right-hand bag are carried: curry-comb, horse-brush, a couple of cloths, a fleam, paring-knife, mane-comb, five brushes for removing the mud, waxing, polishing, coloring, and greasing the boots and horse equipment, (each brush $5'' \times 2\frac{1}{4}''$,) wax of 3 kinds, cork stopper, box of grease, brick-dust, iron-filings, box of chalk, button-stick, brush for cleaning brass, rotten stone, pumice-stone, screw-driver, emery-stick, patches of cloth, white chalk, bran, knife, fork, spoon, salt, herbs, handles of the kettle, and slippers.

These, with a few other articles that it is scarcely worth while to name, form a collection that would do credit to a well-supplied store, but seem to be rather too numerous for the good of the horse.

The valise is of cloth, and is strapped to the cantle; in it are carried: 1 pair of pants, the uniform coat, or spencer, the overalls when not in use, 2 shirts, 2 pairs of drawers, 1 pair of linen cloths for wrapping the feet, 1 pocket handkerchief, 1 pair of gloves.

The schabraque of cloth, with black lamb's-wool seat.

Four men in each platoon carry a hatchet, strapped to the left holster.

The bridle consists of a crown-piece, brow-band, throat-latch, nose-band, 2 cheek-pieces, and 2 pairs of reins; the front is ornamented by diagonal plaited cords, as in the Russian service; the cheek-pieces are single where they buckle to the crown-piece, and are split below, the longer end buckling to the curb-bit, the shorter connecting with the snaffle by a chain and toggle.

Both bits are of steel; there are 3 patterns of curbs, of different degrees of severity; the curb-chain is also of steel.

The reins buckle to ordinary bit-rings.

The halter has a plain headstall, and a rope 6′ long, of the thickness of the little finger; by attaching the snaffle-bit it becomes a watering-bridle.

On the march, the halter is hung on the left side of the pommel.

Two forage-ropes are carried, hung to the cantle.

The forage-sack is a long linen bag, with a longitudinal opening in the middle; when empty, it is carried on the pommel.

On the march, it contains the oats and bread, equally divided between the two ends; in this case it is attached to the rear fork.

The hay is also attached to the rear fork.

The overcoat and stable-frock are on the pommel.

The stable-blanket girth is in the forage-sack.

The camp-kettle is carried on the end of the valise.

The picket-pins for light cavalry are of wood, 16″ long, and 2″ in diameter; there is a small iron ring near the head for attaching the halter-rope; each man carries one strapped to his right holster.

The picket-pins of the heavy cavalry are from 3½′ to 4′ long; the pin is carried in a boot, attached by a long strap to the right holster, the butt end being secured by means of a small strap from the surcingle.

The handle of the curry-comb unscrews.

Bridles are issued to the regiments cut out, but not sewed together.

In bivouac, the schabraque is used to cover the equipment.

The saddle-blanket is used as a horse-cover in bivouac during bad weather, and in garrison in the *daytime* only.

The equipments and arms are kept in the corridors of the quarters.

Officers use the English saddle in the riding-schools, but on parade they must appear with the Hungarian tree, which, for them, is covered with leather.

The spurs are of steel, with short shanks, and are screwed permanently to the heel of the boot

Martingales are exceptionally used,—for horses that will persist in throwing up the head continually.

The men usually make a spare schabraque out of old blankets: this alone is used at drill; on the march it is placed on top of the other.

The saddle and equipment, packed, weigh 50 pounds.

The men always ride on the curb, passing the snaffle-reins through a loop on the curb-reins, and allowing them to hang loose.

CLOTHING.

The clothing is well made, and of most excellent material.

In the issue of clothing, each article is supposed to be divided into a certain number of portions, and every man is allowed a certain number of portions per annum, which he may draw in whatever articles he pleases. The clothing is issued to the squadron captains either made up, without being trimmed, or merely in the shape of the raw material,—just as they elect.

The system of portions is also pursued with regard to the horse equipment, each captain drawing the number allowed his squadron in whatever articles happen to be required.

The overcoat for all the cavalry is of thick white cloth, with sleeves and a long cape; it is made very long and loose.

It may here be stated that this white cloth, of which the uniform coats of the infantry are also made, is stated by the Austrian officers to be excellent for the field; it is cleaned by washing and pipe-clay; and they seem to prefer it to any other color.

The uniform coat is a short, double-breasted frock, with a standing collar, cut away in front; the lancers alone wear epaulettes. This coat is white for the heavy cavalry; dark green for the lancers; light or dark blue for the hussars.

A spencer, of the same color as the coat, is worn by all the cavalry on certain occasions; it has a rolling collar, and is made so loose that it may be worn over the uniform coat.

The men may wear a vest if they please.

The pants are rather scant; those of the hussars fit perfectly tight to the leg, and are worn under the boots; those of the other cavalry are reenforced with leather as far up as the knee.

For the heavy cavalry the pants are light blue, with a red cord; for the rest of the cavalry they are of the color of the coat.

The hussars wear boots reaching nearly to the knee; the rest of the cavalry wear half-boots. No spare boots are carried on the march.

The stable-frock, neatly made of coarse white linen, serves as a uniform coat in the summer. No linen pants are issued or worn. For service in cold weather, gray cloth overalls are issued; they button all the way up, both on the inside and outside of the legs. On the march, in winter, the men wear the vest, uniform coat, spencer, cloak, pants, and overalls.

Socks are not worn, but are replaced by linen bandages.

Shirts and drawers are issued.

The forage-cap is the same for all the cavalry; it is of a very dark

color, and is somewhat of the shape of the French kepis, the visor being more peaked, and the top larger.

The heavy cavalry wear a metallic helmet, with a high crest. The lancers wear the well-known Polish lancer hat. The hussars wear a cylindrical shako, with a peaked visor.

The shoulders being bare, except for the lancers, the distinction of grade is on the collar and cuffs. For officers, it is as follows: a 2d lieutenant has one star, embroidered in gold or silver, on each side of the collar; a 1st lieutenant has two stars; a captain, three; a major has a narrow strip of lace on the cuffs and on the front and upper edges of the collar; also, one star on each side of the collar; a lieutenant-colonel has the same lace, and two stars; a colonel, the same lace, and three stars; a general of brigade has the cuff and collar wholly covered with plain lace, and one star; a general of division, the same lace, and two stars; a full general, the same lace, and three stars; a field-marshal has the cuff and collar partly covered with waving lace, and has three stars.

A sergeant has three stars on each side of his collar; a corporal has two; a private of the 1st class, one.

On certain occasions the officers wear silk sashes, colored black and yellow.

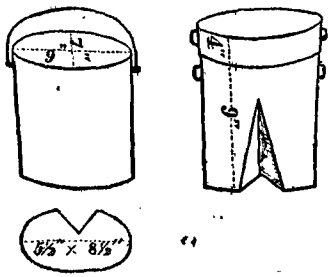
The stock, for both officers and men, has a flap, like the Russian; the upper edge of the stock is white.

Gloves, or mittens, of cloth, are issued to the men.

RATIONS.

The food of the Austrian soldier consists chiefly of bread and soup. From 1½ to 2 pounds of bread is the daily ration.

An allowance of from 5 to 10 cents per diem, according to the price of food, is made to each man, to enable him to purchase meat (generally ¼ pound) and vegetables for soup.



In garrison, they have soup but once a day,—about noon; in camp, they also have soup soon after reveille.

In the field, hard bread is generally used.

The men generally make their breakfast and supper on a piece of bread and a little glass of brandy purchased at the sutler's.

COOKING-UTENSILS.

Kettles of the annexed shape and dimensions are used by the cavalry in garrison and in the field. The handle of the kettle can be unhooked, and is carried in one of the tornisters; there is also a straight handle for the top, so

that it may be used as a frying-pan; this handle, also, is carried in the tornister.

There is one of these kettles for every six men.

It is carried by that man of the mess who has the strongest horse. A linen bag is put over the valise, to keep it clean; then the kettle is put on one end, the cover on the other; a second bag, over the whole, secures the kettle.

Each man has a spoon, and they eat in common out of the kettle, in the field.

In the field, ovens are made of wattling, mud, and straw, as described in Laisnés's Aide-Mémoire du Génie.

HORSES.

The minimum height of the heavy-cavalry horses is 15 hands 1 inch.

Do. do. light do. 14 " 1 "

Some of the light-cavalry horses are even below this mark.

Stallions are not used in ranks.

The horses are branded on the left hip with the initials of the emperor, and of the province where purchased; on the left side of the neck, under the mane, is branded the number of the horse. They are purchased by a commission of cavalry officers, and issued to the regiments as required. If the captain objects to receiving a horse, he appeals to the colonel, who decides.

Horses are received at the age of 5 years, as a general rule; they are broken in by old soldiers, under the direction of the 2d captain of the squadron.

If a soldier rides the same horse for 8 years, he receives a gratuity of about $7, and $2.50 for every additional year. If he rides him for 20 years, he becomes the owner of the horse and equipment, and may take him away when he leaves the service.

The horses of the same squadron are not necessarily of the same color.

Lieutenants and 2d captains are allowed one government horse each, and forage for two private horses; above the grade of 2d captain, officers must own their own horses. If an officer allowed a government horse uses him for 8 years, he becomes the property of the officer.

A colonel is allowed forage for 6 horses in peace, for 7 in campaign.

A lieutenant-colonel or major is allowed forage for 5 horses in peace, for 6 in campaign.

A first captain is allowed forage for 4 horses in peace, for 5 in campaign.

A second captain is allowed forage for 3 horses in peace, for 4 in campaign.

A lieutenant is allowed forage for 3 horses in peace, for 3 in campaign.

For a certain proportion of these horses commutation for forage may be drawn, although the officer does not actually possess the horses.

In addition to the allowance of forage, a certain monthly allowance in money is given to assist the officer in keeping on hand the proper number of horses; this allowance is as follows:

For a colonel, about $10.

For a lieutenant-colonel or major, about $8.

For a 1st captain, about $6.50.

For a 2d captain, about $4.

For a lieutenant, about $2.50.

Very few of the horses used in the army come from the government breeding-establishments, these consisting mainly of good stallions, and having for their object the improvement of the breed in the country.

The heavy-cavalry horses are principally from the German provinces; they are of fine appearance, but generally wanting in endurance, being often long-legged and narrow-chested.

The light-cavalry horses are excellent; they are of fine appearance, active, hardy, intelligent, and seldom vicious. They are mostly from Hungary, Transylvania, and Poland. Large numbers are imported from Russia.

The average price of the cuirassier horses is $80.

Do.	do.	dragoon	"	65.
Do.	do.	light-cavalry	"	56.

FORAGE.

The ration of a heavy-cavalry horse is 6 pounds of oats, 10 pounds of hay, 2 pounds of straw; for a light-cavalry horse it is 6 pounds of oats, 8 pounds of hay, 2 pounds of straw.

Five days' rations are carried on the march.

The hay is twisted into a rope, and then coiled into a circle; 2 men are needed to twist it in different directions, first wetting it a little.

In barracks there are 3 equal feeds each day; one at reveille, another at 11½, the last at dark.

The horses are watered 3 times a day.

As a general thing, the horses are not fed during a march.

In the field, sickles are carried.

The ration of straw mentioned above is for the litter.

STABLES, AND STABLE-MANAGEMENT.

The variations in the plan and arrangements of the stables are very great. In some there is a single passage-way, with a row of stalls on one side only; in others, a long hall, with a row of stalls on each side; in another, two halls, with two rows of stalls on each side of each hall.

Some are for 8 horses, others for 16; others, again, for 200.

In some, the mangers are of wood; in others, of wood, lined with iron; in others, of stone; some of these mangers being continuous, others for a single horse.

The hay-racks are generally of iron; sometimes a rack for each horse, in other cases one long rack for many stalls.

Single stone mangers, and iron racks, seem to be the best.

In Vienna the stalls are floored with plank, the head of the stall being of clay, that the fore-feet may rest upon it; a drain, covered with movable boards, runs along behind each row of stalls.

In Verona there are stalls paved with small, round paving-stones. The passages are sometimes paved with stones, sometimes with wooden blocks.

The roof is supported by pillars. The stalls are separated by swinging bars; in the stables for officers' horses, cushions are suspended from these bars.

There is a shelf over the rear of each stall; a hook, or pin, on each post.

The name of the man to whom the horse belongs is over each stall.

As the quarters are usually over the stables, the racks are filled from below. The stalls are very large; in those of the stables of the 12th lancers, at Vienna, they are 11′ long, and 5′ 4″ wide, with a passage-way of 9′.

During the day the litter is generally laid on racks, under sheds, in the yard; in the stables of the riding-schools, the litter is kept down during the day.

The stables are kept in good order; those of the riding-schools are patterns of neatness.

No equipments are kept in the stables.

The stable-guard consists of 1 non-commissioned officer per squadron, and 2 men per platoon; one of the latter must always be awake.

Whenever any officer in uniform enters a stable, the man on duty at once reports to him the condition of affairs.

In some of the stables the racks for drying the forage are of iron, with sheet-iron roofs over them; these roofs can be turned up when the sun is out.

Attached to one stable was a horse-bath, 5′ deep, 18′ wide, 30′ long at bottom, 61′ long at top, approached by a ramp at each end,—these ramps 15′ 6″ long.

Each man feeds his own horse; he stands at the foot of the stall, and receives from the non-commissioned officer, as he passes down, the portion for his horse. When all the men have received their portions, the non-commissioned officer reports to the officer of the day, at whose command the men place the food in the manger and rack, and stand by their horses while feeding.

DAILY DUTY IN GARRISON.

In summer and winter, reveille is at from 5 o'clock to 6 o'clock.

At reveille the men put on their pants and stable-frocks, fold up their beds, and go to the stable, one man remaining in every room to police it. They then rub down the horses with straw, remove the litter, water and feed, clean the horse with the brush while he is feeding.

In cleaning, the curry-comb is used only to clean the brush: it is never applied to the horse.

They then return to the quarters, wash, dress, and take their breakfast, which is a piece of bread and a glass of brandy.

At about 8 o'clock there is a drill, or else the horses are taken out for exercise; in any event, the horses are saddled, that the men may have some occupation, and keep the equipment in order. When the drill is over, they unbridle, put on the halter, and loosen the girths, carry the bridle and arms to the quarters, put on the stable-frock, return to the stable, and unsaddle.

They then rub the horses down with straw; carry the saddles to the quarters; clean them, as well as the bridle, arms, &c.

At 11½ is the second feed.

After feeding the horses, the men have their dinner.

The guard and picket saddle up, and get ready for guard-mounting, which is at 12½.

The rest of the men sleep, or do what they please, until 2 o'clock; at which hour the horses are cleaned with the brush.

Until nearly dark the men are then at school, where they are taught the duties of patrols, sentinels, &c., the names of the officers, &c., &c.

About dark they go to the stables, make down the litters, water the horses, take off the blankets, give the last feed, and leave the horses quiet with the stable-guard.

They then return to the quarters, whence they may be absent until 8 o'clock, unless they have a pass for a longer time.

Must be in bed at 9 o'clock. Before going to bed they grease their boots, and stick them in the pants, so as to be ready in case of a sudden alarm.

At tattoo and reveille the roll-calls are by platoon.

A picket consisting of an officer and 10 men is always ready for patrol duty; their horses are in a separate stable, saddled, but not bridled.

The sergeants and corporals do not clean their own horses; this is done by the dismounted men.

While we were in Vienna, on the morning of the 9th January, at 6 A.M., the 12th lancers were suddenly alarmed; in 40 minutes the regiment was formed in marching-order, baggage packed, platoons told off, officers at their posts, &c. This was considered sharp work for quarters.

The whole garrison was alarmed at the same moment; this is done, not unfrequently, by the emperor.

QUARTERS.

The quarters are generally over the stables.

The rooms open upon a corridor; about 20 men are in each room.

The sergeants have a separate room; the corporals are with the men of their platoons.

Each man has an iron bedstead, a bed-sack filled with straw, (which is renewed every three months,) a straw pillow, and 2 blankets: these articles of bedding all belong to the barrack, and not to the man; they are under the charge of a barrack-master.

The valise, tornisters, and cleaning-utensils are kept in the quarters.

The clothes are either hung upon pins at the head of the bed, or are on a shelf.

The name of each man is over his bed.

In every room are tables and benches for messing.

The arms and equipments are kept in the corridors, on racks and stands; the carbines are hung on a pin by the guard, muzzles down.

Some of the officers are required to lodge in the barrack; the others have quarters elsewhere, and receive a commutation.

DUTIES OF OFFICERS, ETC.

The 1st captain is responsible for the arms, horses, &c.; he makes returns to the colonel twice each year. He is the only squadron officer who can inflict punishment,—except on detachment, when the detached officer has equal powers. He may confine men for 48 hours in irons; he can inflict 20 lashes; but if he abuses his power the colonel may prohibit him from exercising it.

The 2d captain is in general charge of the 2d half squadron, but is more especially charged with the instruction of recruits and young horses.

Each lieutenant is in charge of a platoon, and is responsible for its order, cleanliness, &c.; he can inflict no punishment; he forms part of his platoon, and always accompanies it on detachment, drill, &c.

The 1st sergeant has duties similar to those of the same grade in the United States service; he is in charge of the papers, military duties, details, &c.

The 2d sergeant is more particularly under the control of the 2d captain, in charge of the recruits and young horses.

The corporals are divided equally among the platoons, and are in charge of the rooms, guards, &c., &c.

Muster-rolls are sent in by the captain every month; they are checked and countersigned by the paymaster, adjutant, and intendant.

The men are paid every five days.

Regular musters are held only once in each year, and not always so often. They are made by the general of brigade and a military commissary; at these the roll is called, the horses counted, &c.

MARCHES, ETC.

Marches are conducted at the rate of from 3 to 4 miles per hour, (for the most part at a walk,) and usually last about 5 hours.

Over very rough or steep ground the horses are generally led.

The hussars march long distances at the trot, and know no obstacles; rivers, marshes, mountains, and obstructed ground, check their course but little.

About half an hour after starting, a short halt is made, to allow the horses to urinate; only those men dismount whose girths need tightening. At the middle of the march a halt of half an hour is made.

The men are severely punished for not girthing tight.

As already remarked, the men ride on the curb on the march, the snaffle-reins hanging free. The stirrup-leathers are of such a length that, the leg hanging naturally, the bottom of the stirrup shall be 1″ above the spur; with hard-gaited horses the stirrups are somewhat shorter.

No tents are carried in the field; the men hut themselves.

The officers seldom carry any mess-apparatus, but partake of the food of the men.

The following wagons, &c., are allowed in campaign:

For each field officer, 1 wagon	5	wagons.
For medicines	1	"
Regimental chest	1	"
In each division, for spare shoes, saddles, &c., 1 wagon	4	"
Forge	1	"
Total of wagons for a regiment of 8 squadrons	12	"

Each squadron officer is allowed forage for 1 pack-horse; on this he places a small portmanteau, or pair of hair bags. But these pack-animals are often ordered to be left in depot; and in this case the baggage is put on one of the spare horses.

Each officer's servant usually rides one of his master's spare horses.

The weight carried by a light-cavalry horse in the field is:

Weight of saddle and equipment	50	pounds.
5 days' hay (8 pounds for light cavalry)	40	"
5 days' oats (at 6 pounds)	30	"
5 days' bread (at 2 pounds)	10	"
Load of light-cavalry horse	130	"

This is exclusive of the arms, ammunition, and rider.

Before going into action, the men generally manage to throw away the hay, and "bleed" the forage-bags.

SCHOOL OF EQUITATION.

The central cavalry school of equitation is at Vienna. A lieutenant from every regiment of cavalry is sent thither,—40 in all.

Each officer brings a soldier with him to take care of his horses; but this soldier receives no instruction. The practice of instructing non-commissioned officers has been abandoned. The officer brings with him his own "imperial service horse" and that of the soldier.

There are also about 100 horses belonging to the school, with grooms especially for them.

The course of instruction lasts for 2 years; one-half of the officers are changed every year.

The instruction consists of equitation, stable-duty, fencing, and the veterinary art; for the latter they attend the veterinary school.

They ride several hours each day, almost always using the English saddle, and frequently leaping, &c., without stirrups or girths.

They become excellent riders, and manage their horses well.

A good anatomical museum is attached to the school; it contains natural preparations, the Augoux models, plates, &c.

There is also a good fencing-room.

There are two fine riding-halls; one is 238′ by 72′, the other 175′ by 56′.

The floor is a mixture of clay and sand.

The stables are excellent; one, in particular, is probably the finest in the world.

In this connection, it may be well to give the dimensions of the riding-halls and stables of the school for artillery and engineers, now in course of construction at Wiener Neustadt, near Vienna, as they are regarded as models.

The riding-hall is to be 288′ long, 62′ wide, and 27′ high.

The stables are to be for 144 horses; the roof arched, with 2 stalls under each arch. The ventilation and light over the stalls in the roof; the forage and equipment to be kept in rooms over the corridor.

The corridor is 8′ wide; stalls, 12′ × 5′, and 15′ high; mangers, of marble, 3′ × 1′, and 3′ 8″ above the floor; the racks, 5′ 2″ above the floor, and 1′ 6″ high; *bottom* of manger, 2′ from the floor.

Open riding-grounds are attached to every cavalry barrack.

THE VETERINARY SCHOOL.

This is at Vienna. Its chief purpose is to instruct veterinary surgeons for the army.

The full course is of 3 years; for certain purposes, 2 years; for ordinary farriers, merely to learn to shoe the horse, 6 months.

It is much on the principle of that at Berlin, but is more extensive, and better organized.

The collections of natural history and comparative anatomy are most excellent; they embrace not only stuffed specimens of many animals, birds, and fishes, skeletons, bones, jaws, teeth, &c., but also admirable preparations of the muscles of the different parts of the horse, the veins, arteries, &c.,—diseased, as well as sound.

There is a fine collection of instruments for operations on the eye, ear, urinary organs, &c., as well as for amputations, docking, bleeding, &c.

For bleeding in the neck, the spring lancet is used.

A laboratory, lecture-rooms, dissecting-rooms, rooms for the injection of preparations, &c., are attached to the institution.

The apothecary establishment is very complete and well arranged; the number of remedies in the pharmacopœia is *reduced* to 160.

The stables are rooms opening upon a corridor; some of these rooms are for single horses, others for two, four, six, and ten.

They are clean, but hot and badly ventilated.

The animals affected with internal diseases are in different stables from those troubled with external diseases; glandered horses are kept in separate stables.

Glanders is regarded as incurable; they keep the horse long enough to be certain that he is really afflicted with that disease, and then kill him.

In 1854, two of the students died of glanders; they died in about 8 months after being inoculated, the first symptom being an incurable ulcer on the hand.

They never cauterize for the lampass, but administer purgatives and green food, and bleed by drawing the lancet between the bars.

The forges, tools, and shoes are very rough and clumsy.

Formerly very complicated machinery was used in shoeing the horse, but they have now learned that the very moderate number of 3 men will suffice, without artificial aids: one man, by the assistance of a cavesson and *mesmerism*, holds and controls the horse, another holds his foot, a third puts on the shoe. It is possible that they may learn to dispense with one or two of these assistants, as well as with mesmerism.

The shoe is always fitted and put on cold.

There are usually 6 nails in each shoe.

In summer the shoe is plain, with neither toes nor heels; in winter it

has both. For the horses of the officers, in winter, one heel is firmly attached to the shoe, the other can be unscrewed; on leaving the stable, the blunt movable heel is replaced by a pointed one.

The men pay for the shoeing of their horses; a very small daily allowance is given them to cover this expenditure.

The greatest possible attention is paid in the regiments to the condition of the shoes; it is justly regarded as one of the most important points.

At the veterinary school, dogs, cows, sheep, &c., are treated. Sheep are kept here to be inoculated for a disease quite similar in its phenomena to the small-pox; the animal is inoculated upon the bare lower surface of the tail, the matter collected from the pustules and distributed among the great sheep-proprietors of the country.

This disease formerly killed off some 40,000 per annum in the empire; now scarcely one dies of it.

This veterinary school may be regarded as one of the very best in Europe, and is well worthy of imitation.

VETERINARY SURGEONS, ETC.

As has been already stated, each regiment has a senior veterinary surgeon; each squadron a veterinary surgeon.

The first has the rank of a first sergeant, the second that of a corporal.

They are all educated at the veterinary school, and are either the children of veterinaries, or else well-conducted soldiers whose original pursuit was that of a horseshoer.

They generally shoe the horses themselves, as well as treat their diseases; they always instruct three or four good men in the squadron, who act as their assistants.

The pay of a senior veterinary surgeon is about $12 per month; the squadron veterinaries receive about $9 per month.

Both are permitted to practise upon the horses of civilians, on their own account, and also receive a small additional stipend for their services in treating the squadron horses; this last amounts to from $9 to $10 per month.

The horses are shod about once in five weeks.

The evening before a horse is to be shod, he is caused to stand in wet clay; if no clay is to be had, a mixture of dung and mud is substituted, or else the foot is wrapped in rags filled with dung.

The effect of this is to soften the hoof and facilitate the operation of paring and shoeing; it is represented as being attended with the most beneficial effect.

Very little of the hoof and frog is cut away.

The number of medicines used in the regiments is very small. Nadosy's "Equitations-Studien," and Professor Rölls's works, contain the Austrian views of the veterinary art.

GENERAL REMARKS.

The imperfect sketch of the Austrian cavalry given in the preceding pages will show that, as might have been expected, it presents many things well worthy of imitation, and much to be avoided.

The foundation of the efficiency and well-deserved reputation of the Austrian cavalry would seem to be the great perfection of the individual instruction of the men: without this, no organization, however perfect it may be, can lead to good results; with it, the defects of a very bad organization may be overcome or lost sight of.

The system pursued in the purchase of horses is good.

The manner of posting the officers in a division is worthy of the most attentive consideration. There may well occur exceptional cases in which it is absolutely necessary that the officers should be in front of the men to lead and encourage them in desperate situations; but it would seem that the Austrians have good reasons for placing the officers in the ranks. They say that since the officers have, as a general rule, perfect control over their horses, they will keep them in the proper direction, and thus prevent the men from opening out, the charge being thus rendered compact and effective: they state that this formation results from the experience of actual charges upon an enemy. The general features of their veterinary system might be followed in our service to great advantage.

Their system of depot squadrons is good, and produces good results. The cooking-utensils seem to be well adapted to the end in view. The tactical unit would appear to be entirely too large to permit the great mobility and celerity which are the essential conditions of the success of cavalry; this defect is probably overcome only by the perfection of individual instruction.

The number of things carried by the men, and the excessive weight of the equipment, seem pernicious and absurd in the extreme. I was informed by cavalry officers that the men usually manage to throw away the greater part of their load before many days passed in the field.

The number of non-commissioned officers is too small, in comparison with the number of privates.

The exercises preliminary to the instruction in equitation are worthy of imitation; while it would by no means be advisable to follow blindly all their conditions for a good seat.

The articles of clothing would appear to be altogether too bulky: no doubt the comfort of the man is a very important consideration; but, if

that object is gained at the expense of the efficiency of the horse, the result cannot be doubtful.

In conclusion, I would state that much valuable information may be derived from the Cavalry Tactics, Nadosy's "Equitations-Studien," Halfzensir's "Innern Dienst der Cavallerie," and other works; those mentioned are in the possession of the War Department, and should, by all means, be consulted by any officers engaged in the preparation of a revised system for our own cavalry.

FRENCH CAVALRY.

THE French cavalry establishment consists of—

1 squadron of "Cent-Gardes."

6 regiments of the guard.....	2 of cuirassiers. 1 of dragoons. 1 of lancers. 1 of chasseurs. 1 of guides, (hussars.) 1 squadron of gensdarmes.
12 regiments of reserve cavalry.	2 of carbineers. 10 of cuirassiers.
20 regiments of the line.....	12 of dragoons. 8 of lancers.
25 regiments of light cavalry...	12 of chasseurs. 9 of hussars. 4 of African chasseurs.

3 regiments of spahis.
9 remount companies.
1 cavalry school, at Saumur.
The mounted gensdarmes.

Each regiment consists of 6 squadrons, with the exception of the African chasseurs, which, during the late war, were increased to 8 squadrons, of which 4 remained in Africa and 4 served in the Crimea.

In time of war, each regiment has a depot squadron.

The duration of service is 7 years.

The regulation height of cavalry soldiers is as follows:

Carbineers.....	minimum,	5′	10″.4.			
Cuirassiers.....	"	5′	9″.2.			
Dragoons and lancers.....	"	5′	8″	maximum,	5′	10″.4.
Chasseurs and hussars.....	"	5′	6″.8	"	5′	8″.8.
African chasseurs.....	"	5′	6″.8	"	5′	9″.6.

The following is the composition of a regiment of three squadrons:

	IN WAR.		IN PEACE.	
	Men.	Horses.	Men.	Horses.
THE STAFF:				
Colonel	1	5	1	3
Lieutenant-colonel	1	4	1	3
Chiefs of squadrons (field officers)	3	12	3	6
Major	1	2	1	2
Captain (instructor)	1	2	1	2
Adjutants (captains)	3	9	3	6
Treasurer (captain)	1	2	1	1
Clothing officer (captain)	1	2	1	1
Assistant treasurer (sub-lieutenant)	1	2	1	1
Standard-bearer (sub-lieutenant)	1	2	1	1
Senior surgeon	1	3	1	1
Assistant surgeon	1	2	1	1
Sub-assistant surgeon	1	1	...	...
Veterinary of the first class	1	1	1	1
Total commissioned staff	18	49	17	29
THE NON-COMMISSIONED STAFF:				
Adjutants (sergeants)	3	3	3	3
Adjutant, wagon-master (sergeant)	1	1	1	1
Assistant veterinaries	2	2	2	2
Chief trumpeter (sergeant)	1	1	1	1
Trumpeter (corporal)	1	1	1	1
Trumpeters (for the depot squadron)	2	2	...	...
Farriers (for the depot squadron)	3	...	...	...
Total non-commissioned staff	13	10	8	8
PLATOON OUT OF RANKS:				
First clerk of treasurer (sergeant)	1	...	1	...
Sergeant in charge of clothing-magazine	1	...	1	...
Sergeant in charge of stables	1	...	1	...
Sergeant (fencing-master)	1	...	1	...
Master armorer, master tailor, master boot-maker (sergeants)	3	...	3	...
Master saddler (sergeant)	1	...	1	...
Quartermaster of the staff (sergeant)	1	...	1	...
Second clerk of treasurer (corporal)	1	...	1	...
Provosts (corporals)	2	...	2	...
Saddler (corporal)	1	...	1	...
Tailor and boot-maker (corporals)	2	...	2	...
Major's clerk (private)	1	...	1	...
Third clerk of treasurer (private)	1	...	1	...
Second clerk of clothing officer (private)	1	...	1	...
Attached to horse hospital (private)	1	...	1	...
Armorers (privates)	2	...	2	...
Saddlers (privates)	6	...	6	...
Tailors (privates)	14	...	14	...
Boot-makers (privates)	12	...	12	...
Enfant de troupe	1	...	1	...
The number of tailors and boot-makers varies with the effective strength of the regiment.	54	...	54	...

TABLE.—*Continued.*

	IN WAR.		IN PEACE.	
	Men.	Horses.	Men.	Horses.
SQUADRON OF CAVALRY OF RESERVE:				
Captain commanding	1	3	1	2
Second captain	1	3	1	2
First lieutenant	1	2	1	1
Second lieutenant	1	2	1	1
Sub-lieutenants	4	8	3	3
Total commissioned officers of a squadron	8	18	7	9
Orderly sergeant	1	1	1	1
Sergeants	8	8	6	6
Quartermaster sergeant	1	1	1	1
Quartermaster corporal	1	1	1	1
Corporals	16	16	12	12
First-class privates	32	32	32	32
Second-class privates, mounted	88	88	69	69
Second-class privates, dismounted	16	...	20	...
Farriers (shoeing-smiths)	3	3	3	2
Trumpeters	4	4	4	4
Under instruction as trumpeters	2	...	...	...
Enfants de troupe	2	...	2	...
Total non-commissioned and privates	174	154	151	128

On the war establishment, each squadron of cavalry of the line has 98 privates of the 2d class, and each squadron of light cavalry has 108.

	IN WAR.		IN PEACE.	
	Men.	Horses.	Men.	Horses.
STRENGTH OF A REGIMENT OF CAVALRY OF RESERVE:				
Commissioned staff	18	49	17	29
Non-commissioned staff	13	10	8	8
Platoon out of ranks	54	.....	54	.....
Squadron officers	48	108	42	54
Non-commissioned officers, privates, &c.	1,044	924	906	768
Total	1,177	1,091	1,027	859

INSTRUCTION AND TACTICS.

No change of any importance has been made in the system since it was adopted as the basis of our own; it is therefore unnecessary to remark upon it.

ARMS AND ACCOUTREMENTS.

Carbineers and cuirassiers.—Metallic helmet, back and breast pieces, pistol, and sabre. The sabre has a Montmorency blade, very slightly curved.

Dragoons.—Sabre, pistol, and musket. The sabre is the same as that of the cuirassiers. The musket has no bayonet; barrel, 36″ long, and weighs 7.9 pounds. On ordinary marches, on parade, &c., the musket is carried with the *butt* in a boot, attached to the right side of the pommel; this boot is 5″ deep, 6″ long, and 2¾″ wide. The muzzle of the musket rises about 3″ above and behind the right shoulder, and is attached to the pommel by a strap. When in expectation of meeting an enemy, the musket is slung over the shoulder, muzzle up.

Lancers.—Light-cavalry sabre, pistol, lance, musketoon. It has been proposed to abandon the musketoon: I do not know whether that has been done or not.

Chasseurs.—Dragoon musket, light-cavalry sabre, and pistol.

Hussars.—Musketoon, light-cavalry sabre, and pistol. The musketoon has both boot and sling.

African chasseurs.—Armed as the other chasseurs, but always carry the musket slung over the left shoulder,—never in a boot.

Spahis.—Musket and pistol as for the African chasseurs, but carry the sabre attached to the saddle, in the Mexican fashion.

Cent-Gardes are cuirassiers, armed with a pistol, and a breech-loading carbine, with sabre bayonet: this bayonet is a very long, light, and nearly straight sabre, without guard; alone, it is an excellent sabre; when fixed on the carbine, it may be used, as a lance when mounted; as an ordinary musket and bayonet on foot.

In all the cavalry, the pistol is attached to the saddle by means of a strap fastened to a ring in the butt.

The cartridge-box has a shoulder-belt, and contains 20 rounds; the men carry spare packages of cartridges in their pouches, or wherever may be most convenient.

The belts, &c., are quite like our own; the sabre-belt fastens with an hook.

A camp-hatchet is carried by the corporals and 1st-class privates.

HORSE EQUIPMENTS.

Our own being at present but little else than modifications of those generally in use in the French service, it is only necessary to describe those of the African chasseurs, and a model very recently adopted.

The saddle of the African chasseurs is a plain wooden tree, with a pad on top, and no skirts; the model not unlike our own, (the Grimsley,) but rather lower in the pommel and cantle.

The girth and surcingle are of leather; stirrups steel; no schabraque. Two shoe-pouches of the usual kind, for 2 shoes and 32 nails each, attached to the hind fork. Nose-bag of hair cloth.

The valise is replaced by canvas saddle-bags, re-enforced with leather. The forage-bag and tente d'abri are fastened to the cantle.

The pistol is in the left pouch; the cloak strapped over the pouches; each man has a hatchet in his right pouch.

A common blanket is placed under the saddle.

The bridle has a single headstall and a Spanish bit, (with a ring around the lower jaw,) the curb-reins attached by swivels, the snaffle-reins to rings on the same bit; the bit buckles to the headstall.

Instead of a halter, a leather collar is used.

The new saddle is the invention of Captain Cogent, director of the saddle-factory at Saumur.

The tree is cut out of a single piece of white wood, the cantle only being glued on; a piece of walnut, the grain running across the tree, is let into the pommel, and a thin strip veneered upon the front ends of the bars; the pommel and cantle are lower than in the old model; the whole is covered with wet raw hide, glued on, and sewed at the edges; no iron bolts or fastenings are used.

The staples for the stirrup-leathers are fastened as usual.

The most important feature in this saddle is the manner of arranging it so that a single size may be used for all horses, or for the same horses when their condition changes.

The sketches on page 345 will explain the manner in which this is effected. Two strips of cork, about 4″ broad, ½″ thick, and as long as the bars of the saddle, are bent to the shape of the under surface of the bars; to give them this shape, they are glued to the bars before the tree is covered with hide; they are removed when they have taken a permanent set, trimmed, and covered.

They are covered with thick felt on the side towards the horse's back, and with leather on the side towards the saddle; a longitudinal slit being left in the leather, in order to insert strips of felt, to increase the thickness of the strips when necessary. The strips are attached to the saddle by means of small pins with heads, shown in figs. A, E, and F; these are inserted in the holes in the iron plates G, and run forward into the slots; the pins (O) at the rear end of the strips have each a hole through the neck; the small keys (M) are run through the holes (N) in the rear ends of the bars, and thus keep the strips firmly in position.

The fig. A represents the under surface of the saddle, with the iron plates (G) let in; the separate fig. G represents one of these plates, with 3 holes and slots to receive the pins of the strips, riveted or screwed to the bars. Figs. B represent a plan and elevation of a strip; fig. E the

front end of a strip, with its pins; fig. F the rear end, with a pin having a hole through its neck to receive the key-pin.

Fig. C represents the cantle, N being the holes to receive the keys, and M being the keys secured by a light chain.

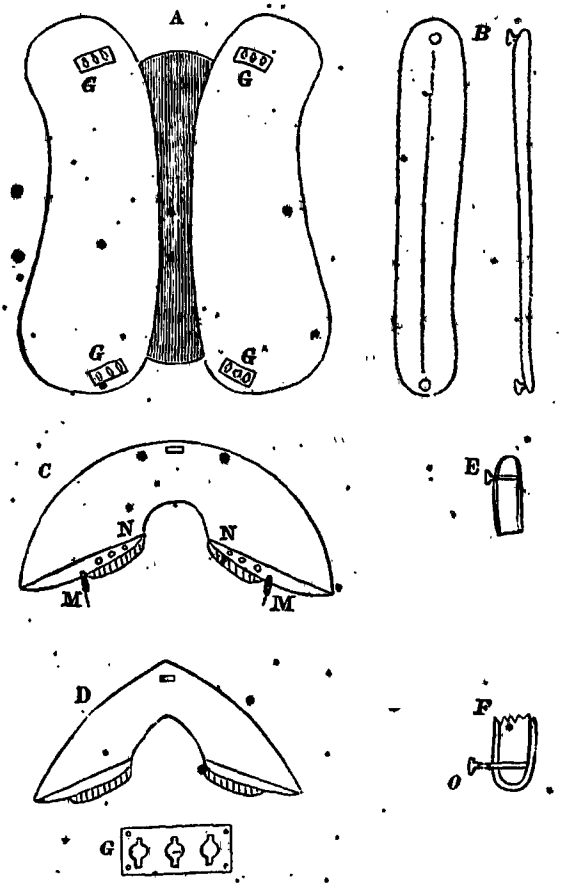


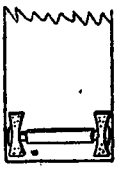
Fig. D gives a front view of the saddle.

For a small horse, the pins are placed in the holes nearest the axis of the saddle; for a large horse, in the outside holes; if a horse is narrow in the withers and broad at the loins, the pins are placed in the inside holes in front, and in the outside holes behind, and *vice versa*.

The tree is covered with leather, and has the ordinary skirts. The girth, as adopted, is of black leather, and in two parts.

The upper part is 4″ broad, is screwed to bars, passes over the tree, under the cover, and projects equally on each side below the bars; at

each end of this piece is an iron pin with a brass roller, as shown in the annexed figure.



The other portion of the girth is a simple strap, 3″ broad, with a large buckle at one end, and a tongue at the other. The tongue of this strap is passed downwards behind the roller on the near side of the horse, then upwards through the roller on the off side, and buckled on the near side.

Captain Cogent prefers extending the saddle-skirts, attaching the rollers to them, and using the girth just described.

The saddle-blanket (which is also the horse-cover) is of thick felt cloth; it is attached to the pommel by a small strap passing through holes in the blanket, which is thus prevented from slipping back, and at the same time raised so as to keep a free channel for the circulation of air over the horse's spine.

The valise is shaped on a former, hollowed out and covered with stiff leather where it crosses the spine, so that it cannot touch; there are pockets on the ends of the valise for the spare horseshoes and nails.

The pouches are as usual; the holster is of wood, covered with raw hide, and is set inside of the left pouch.

The saddle is not blackened.

The new equipment weighs 15 lbs. less than the old.

I am not positive as to the bridle which has been adopted; that proposed by M. Cogent, and which I think has been accepted, is as follows:

There is a snaffle-bit, with branches; the mouth-piece in three parts.

The curb has a cross-bar, and presents two striking peculiarities:

1st. The curb-chain acts upon the nose, instead of the chin: to accomplish this, a ring is sewed to each side of the nose-band, close in front of the cheek-pieces; the chain, resting on the nose-band, passes through these rings, and then forward to the branches of the bit; the requisite leverage is thus obtained.

2d. The mouth-piece is longer than the interval between the branches, the latter sliding through holes in the mouth-piece; the projection of the mouth-piece beyond the branches has a neck and head; a ring catch at the end of the cheek-piece goes over this neck, and keeps the mouth-piece in its proper position; by raising these ring catches, the mouth-piece is freed and may be slipped down to the bottom of the branches, so that the horse can feed freely.

This arrangement did not strike me so favorably as the Russian: the latter is simpler, and cannot get out of order.

There is in the possession of the War Department a pamphlet of Captain Cogent's, giving the drawings of his bridle and bit.

UNIFORM.

This is so well known in our service that only a few remarks will be necessary.

The frock-coat has not been adopted for the cavalry.

The pants are very loose, and are re-enforced with black leather.

Boots are worn, the spur being permanently attached to the heel.

All troops have both a full-dress and a forage cap; the former is often left at home in time of war.

The full-dress cap varies with the corps; the undress is usually the kepis, which has a large straight visor and a loose conical top.

The African chasseurs wear their full-dress cap in the field; it is much like that of our infantry, rather smaller at top, and has no pompon; their undress cap is the *fez*, a close-fitting red felt skull-cap, with a tassel.

It should be remarked that the uniform and equipment of this admirable corps are solely for service: there is no attempt at ornament, and nothing superfluous is allowed.

HORSES.

In France there are 6, in Algiers 3, remount companies, each consisting of 1 captain, 5 lieutenants, and a variable number of men; their duty is the purchase and care of remount horses.

Except at Saumur, there are no *haras*, properly so called; that is to say, there are no breeding-studs to raise colts for the general service. At each remount depot there are stallions of the race most suitable for crossing with the mares of the vicinity; at the proper seasons of the year these are distributed among the villages to cover the mares of the country gratuitously. The proprietors of the colts are under no obligation to offer them for sale to the government, but usually find it their interest to do so.

Horses are purchased at from 4 to 7 years of age, and must be of French origin.

The animal is brought to the commandant of the remount depot, and submitted to his inspection, without any price being named. If the commandant finds him unsuitable, he is at once rejected; if the contrary is the case, he is brought before all the officers of the depot for a thorough examination.

Each officer then writes his estimate of the value of the animal on a slip of paper; these papers are placed in a hat and shaken up, so that the estimate of each officer may not be known; the mean of these estimates is then taken, and the commandant offers that price for the animal.

If the owner accepts the offer, the price is paid at once; if he refuses, the horse is at once sent away, for no bargaining is allowed.

It often happens that the owner receives a larger price than he would have demanded.

This system is stated to work admirably.

The average price is fixed every year by the minister of war; it is usually about as follows:

For horses of the reserve cavalry	$150
" " artillery and cavalry of the line	120
" " light cavalry	100
" " train of artillery, engineers, and baggage	100
For officers' horses	180

The average height is fixed as follows:

Reserve cavalry	15 hands	2″	to 16 hands.		
Artillery and cavalry of the line	15	"	0½″	to 15	" 2″
Light cavalry	14	"	3″	to 15	" 0½″
Trains	14	"	3½″	to 15	" 2″
Pack-horses	14	"	1½″	to 15	" 1″
Mules	13	"	3″	to 15	" 1½″

Officers' horses a trifle larger than those of their men.

The minister of war may authorize the minimum to be reduced ½″, provided the general conformation and qualities of the animal are something remarkable.

The government provides each officer with two horses; if an officer keeps the same animal 7 years, it becomes his private property; he may have an unfit horse exchanged by applying to the inspector-general at the period of the general inspection, provided the inspector decides that the horse is really unfit for service.

Captains and field officers are all allowed 2 government horses, and forage for the regulation number above two.

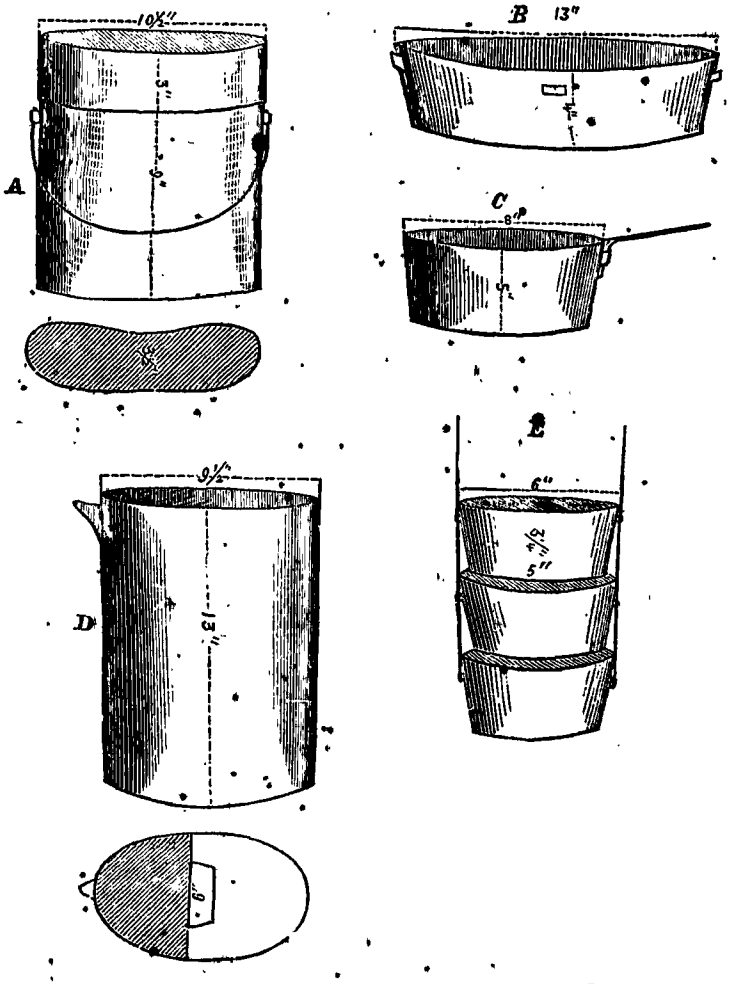
But little can be said in favor of the appearance of the French cavalry horses; those of the heavy cavalry are either heavy, slow, and awkward, or else are long-legged, and have too much daylight under them; the light-cavalry horses must be better than they look, for they appear unable to do their work, yet they manage to get through with it. The horses at Saumur are generally excellent; and those of the African chasseurs are exceptions to the rule; they are entire Arabians, and are generally very good.

RATIONS OF THE MEN.

The normal ration in the Crimea was:

1 lb. 10¼ ounces of bread, or 1 lb. 3¼ ounces of biscuit; 1.05 ounce of rice or beans; 2.1 ounces of the Chollet prepared vegetables; 8¾ ounces fresh meat or salt beef, or 7 ounces of salt pork; 0.44 pint of wine, or 0.11 pint of brandy.

Coffee and sugar were issued extra, and the other parts of the ration were changed according to circumstances.



In the cavalry the messes consist of 5 men each; each mess having its own cooking-utensils, which the men carry by turns, strapped to the saddle. These utensils consist of the marmite, represented in elevation and plan by fig. A; the gamelle, fig. B; the bidon, shown in elevation and plan of top in fig. D; the frying-pan, fig. C; the small gamelle, fig. E.

The marmite is for making soup; the bidon merely to bring water for cooking-purposes; the gamelle as a dish out of which they eat. Sometimes the small gamelle is substituted for the large one; in this case each man has a small gamelle; fig. E represents 3 small gamelles carried

by means of a strap; each small gamelle has a tin cover, which is countersunk, and has a ring as a handle: the cover is attached to the gamelle by a light chain.

The frying-pan is not always issued.

For each mess of 5, one marmite, one bidon, and one large gamelle are habitually provided.

In garrison the cooking and messing are by squadron.

It may be remarked of the French, as of most other continental rations, that they are insufficient, and ought not to be taken as guides in our own service.

The prepared Chollet vegetables are extensively used in the field, and would be admirably adapted for issue in our long prairie marches.

QUARTERS.

These are sometimes in the same building with the stable, sometimes separate.

In the new buildings the horse equipments are kept in the quarters, or else in rooms in the stable-lofts.

The quarters are specially described in the report upon the infantry; it will be sufficient to state here that the arrangement and police are by no means such as to render them models to be followed.

FORAGE.

There are three kinds of rations: that in time of peace, that on an ordinary march, and that in the field in war.

The regulation ration in time of war is as follows:

	Hay.	Straw.	Oats.
Carbineers and cuirassiers..	15.4 pounds;	8.8 pounds;	8.36 pounds.
Dragoons and lancers.....	13.2 "	8.8 "	8.36 "
Chasseurs and hussars.....	11 "	8.8 "	8.36 "
Pack-horses.....	15.4 "	8.8 "	8.36 "
Mules.....	11 "	8.8 "	8.36 "

In October, 1855, the ration in the Crimea was: for French horses, 9 pounds hay, 11 pounds barley; for African horses, 6.05 pounds hay, 10 pounds barley.

The largest allowance for French horses during the campaign was: 11 pounds hay, 13.2 pounds barley.

The allowance for African horses, given above, was regarded as too small.

The regulation allowance may be changed as follows: For hay, an equal weight of clover, or double the weight of straw, or half the weight of oats, may be substituted; for straw, half the weight of hay, or one-fourth of

oats, may be substituted; for oats, double the weight of hay, four times the weight of straw, 50 per cent. additional weight of bran, or 8 per cent. of barley, may be substituted.

If the horse has no appetite, or the forage is of indifferent quality, the food is sprinkled with salt water.

When it is necessary to feed the horse upon grass, he should be accustomed to it by degrees, giving but a little at first, and increasing the quantity as he becomes habituated to it. For the first few days the full or half ration of grain should be issued.

As a last resort, the following substances may be employed for forage: *malt*, which fattens but does not strengthen the horse, and which renders them liable to disease when they change it for other food, after having become accustomed to it; furze, which is very nutritious, but must be crushed with a hammer or in a mortar, on account of the roughness of its leaves; the pods of the locust; flaxseed; the roots of grass, well washed; the bark of trees; and, finally, even dry wood, cut into shavings.

Running water is given in preference to stagnant. Bad water may be purified by charcoal, hydrochloric and acetic acids. If the water contains leeches, or other similar things, the horses must drink with the nose-bag on.

The water given to the horses ought to be, as nearly as possible, of the same temperature as the air; therefore, in summer it may sometimes be necessary to expose it to the sun, while in winter it should be given immediately after being drawn.

STABLES.

The following are the regulations and arrangements of stables:

As far as possible, the horses of the same squadron should be placed in the same building, divided by partition-walls or staircases into stables of equal capacity.

When windows can be arranged in both long walls, place the horses head to head, separating the two rows of stalls by a longitudinal partition, which should not be more than 1′ higher than the top of the hay-rack, between the pillars which support the roof.

The interior width of a stable for 1 row of stalls is 20′; for 2 rows, it is 40′, when they are head to head; 34′ 8″, when they are tail to tail; height of ceiling, 16′ 8″.

Doors should be pierced in the gable-ends, and in the transverse partition-walls, to secure a longitudinal ventilation during the absence of the horses.

The doors for ordinary use should be pierced in the long walls; width, 6′ 8″; height, at least 8′ 8″.

There should be a window, with an area of about 16 square feet, for

every 3 stalls; the sill 10′ above the floor; the sash revolving around a horizontal axis at the bottom, and opening by the simplest mechanism; wooden shutters to be provided, if necessary.

The recesses for the windows should extend to the floor, and be provided with hooks or racks for suspending the horse equipments; in these recesses, openings 3′ 4″ × 2′ 4″ should be made through the wall, for throwing out the litter.

If necessary, ventilators may be cut through the roof in the middle of the passage-ways behind the stalls; ventilators near the floor should be employed only in cases of absolute necessity.

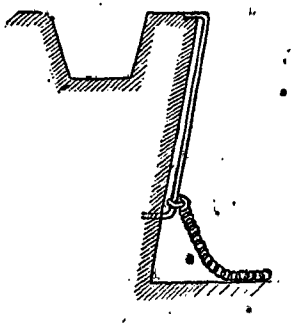
The floor ought to be of hard stones, laid on a firm foundation, and the joints filled with hydraulic mortar, cement, or asphalt; slope of floor of stall, from two to three tenths of an inch in ten inches.

Mangers of wood, stone, or cast iron, placed on a mass of masonry, the front surface of which, as well as that of the manger, has a reversed slope of $\frac{5}{1}$.

The wooden mangers are divided by partitions: those of stone or iron are hollowed out to the length of 2′ for each horse, being solid between the hollows; depth 8″, width at top 1′, at bottom 9″.6; top of manger 3′ 8″ above the floor.

The hay-racks of wood, and continuous, 3′.4″ high, and placed 5′.4″ above the floor. The bars round, and capable of turning in their sockets, each bar 1.2″ in diameter, and placed 4″ apart; racks of iron may be authorized.

The system of securing the horse consists of: 1st, a bar of round iron bent at both ends, placed up and down, parallel to the face of the manger, the upper end secured to the manger, the lower built into the masonry; 2d, a ring sliding on this bar, and having a chain 2′ long, with a T at the free end, attached to it; this T toggles to the halter-ring. The annexed sketch shows this arrangement.



Each horse is allowed a width of 4′ 10″, never less than 4′ 8″, so that he may have the allowance of 70 cubic feet, and the space necessary for stable-guards, utensils, &c., may be preserved.

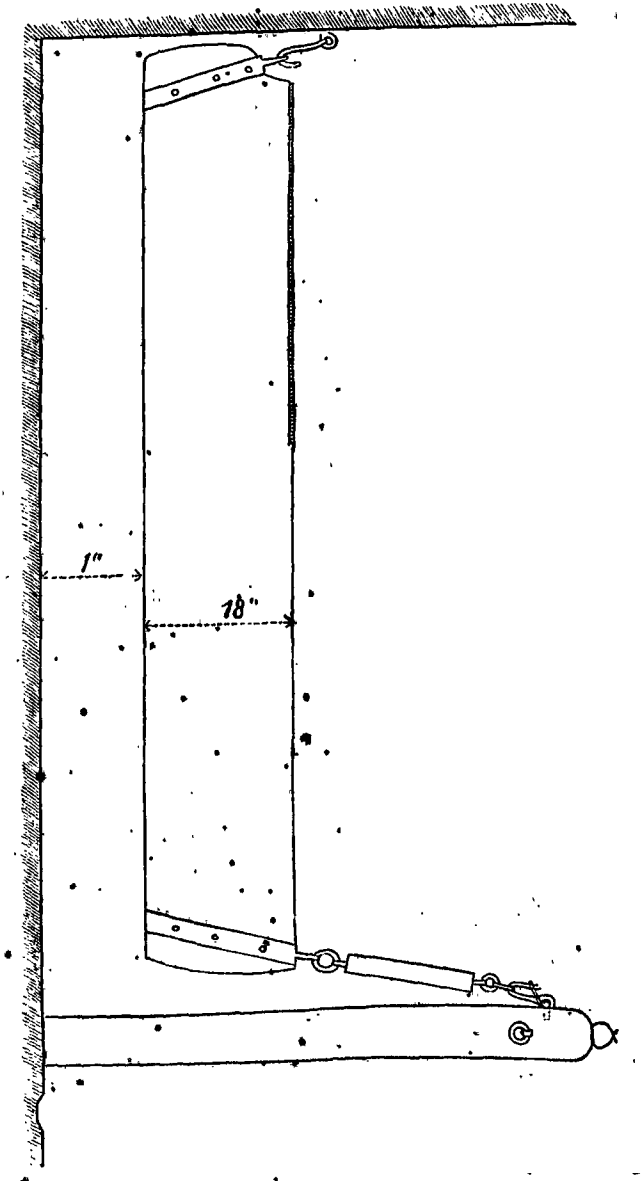
Stables which are less than 29′ wide and 12′ high can be used for two rows of horses only as a temporary arrangement.

Among the French stables of all dates and varieties, one recently completed at Saumur, and the new ones at Lyons, are justly regarded as models of excellence.

Their dimensions and general arrangements are in conformity with the

regulations given above: there are, however, some details worthy of notice; that at Saumur, being the most perfect, will be described in preference.

The stalls are 4′ 10″ wide in the clear, and 10′ long to the heel-posts;



they are separated by swinging planks, suspended as shown in the foregoing sketch.

The floors are of cubical blocks of stone, laid in cement. A shallow gutter in rear of each row of stalls allows the stale to drain off. The longitudinal partition is of masonry, and about 10′ high. The interior of the stable is plastered; the wood-work painted oak color. In the window-recesses there are racks, on which to hang the horse equipments when saddling and unsaddling.

The equipments are kept in rooms in the loft, where the saddles are placed on horizontal wooden pins, the bridles hung on hooks. The racks are continuous and of wood; the string-pieces, and each bar, are bound with narrow strips of sheet iron.

The lower string-piece rests upon iron hooks, let into the wall; the upper one is held firm by iron bars, also let into the wall.

The manger is a continuous mass of stone, with an excavation for each animal; these excavations are 22″ long, 12″ deep, and 12″ wide at top.

The building is divided into apartments, for about 20 horses each, by transverse partitions and stairway-halls; there are large doors in these partitions. In a central hall there are water-tanks.

The openings mentioned in the regulations for removing the litter do not exist.

The halter-bars are arranged as described in the regulations; but there is another ring and chain, above the manger, for use in the daytime.

Forage for 3 or 4 days is kept in the loft, where there are also rooms for a few non-commissioned officers.

In the floor of the loft there are trap-doors, so that hay and straw may be thrown down into the halls below.

The oats run down from the bin, through a wooden pipe, into a large box on wheels.

On the outside of the walls there are rings for attaching the horses while being groomed.

At Lyons, some of the stables had quarters in the second story; this is stated by many officers to be an admirable arrangement, and attended with no inconvenience whatever; there are a few who object to it.

The hospital stables are always separate from the others, and have box stalls.

STABLE-DUTY.

In each squadron, the stable-guard generally consists of a corporal and 1 man for every 20 horses. It is their duty to feed the horses, watch over their safety during the night, and attend to the general police of the stables, being assisted by an additional detail at the hours of stable-call.

About one-half the litter is usually kept down during the day.

The oats is given in two feeds: one-half at morning stable-call, the rest in the evening.

The hay is divided into three equal portions,—at morning, noon, and night; in the forage-magazine it is put up in trusses of 1 ration each, and thus received in the stable-loft; at each feed the stable-guard receive these trusses, and divide each one among three horses.

If straw is fed, it is given either just before or just after the hay,—always in the same order.

The horse is watered twice a day, either just before or after his grain.

The horse is cleaned principally with a *bouchon* of straw and with the brush; the comb is used only to clean the brush.

FIELD SERVICE.

The allowance of transportation in the field is probably less for the African chasseurs than for any other corps; it will, therefore, be given as it was for the 4-squadron regiments in the Crimea:

For each regiment, 1 cart for money, papers, &c.

For the colonel	1 pack-animal.
For 2 chiefs of squadrons	2 " "
For 2 captains adjutant	2 " "
For 2 surgeons	1 " "
For 2 veterinaries	1 " "
For 2 adjutants (non-commissioned)	1 " "
For 1 treasurer	1 " "
For field officers' mess	1 " "
For medicines and instruments	1 " "
For horse-medicines	1 " "
Total for staff of 4-squadron regiment	12 pack-animals.

In each squadron—

2 captains	2 pack-animals.
4 lieutenants	2 " "
Officers' mess	1 " "
Sergeants' mess, &c	1 " "
Total for each squadron	6 pack-animals.

Recapitulation.

Staff	12 pack-animals.
4 squadrons	24 " "
For ammunition, cacolets, and subsistence	12 " "
Total for a regiment of 4 squadrons	1 cart and 48 pack-animals.

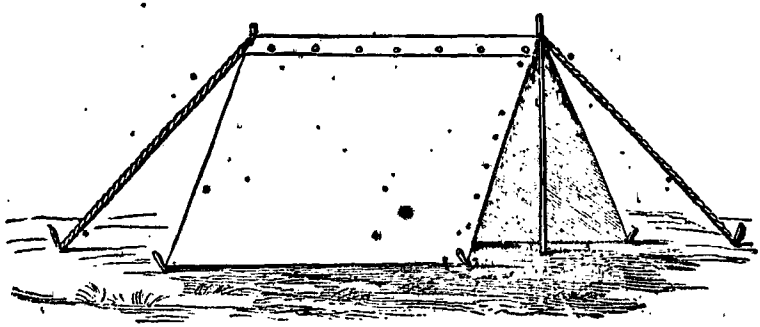
The led horses of the squadrons are used as pack-animals, and counted in the number as given above; officers are not usually permitted to pack their spare riding-horses.

At the commencement of a campaign, each lieutenant of cavalry receives $125 for the purchase of his outfit; a captain receives $250; if a lieutenant is promoted during the campaign, he receives the difference between the two sums.

During a campaign the officers are permitted to draw rations from the commissary department at cost prices, paying their bills monthly.

In the Crimea, the mass of the French troops had no other shelter than the tente d'abri, (shelter-tent;) as late as October, 1855, the African chasseurs, the cuirassiers, some of the other cavalry, and most of the infantry of the line, had only the shelter-tent; the imperial guard and the artillery were provided with the regulation tent. During the first winter, very few of the troops had more than the shelter-tent. This is composed of pieces of linen 5′ square, having button-holes along one edge, and the buttons along the adjoining edge; each man carries one piece.

The following sketch shows the manner of forming the shelter. The two sticks, each about 4′ long, are stuck in the ground a little more than 5′ apart; they are connected by a small cord, drawn tight, which is passed around each about 3½′ above the ground; the ends of this cord are attached



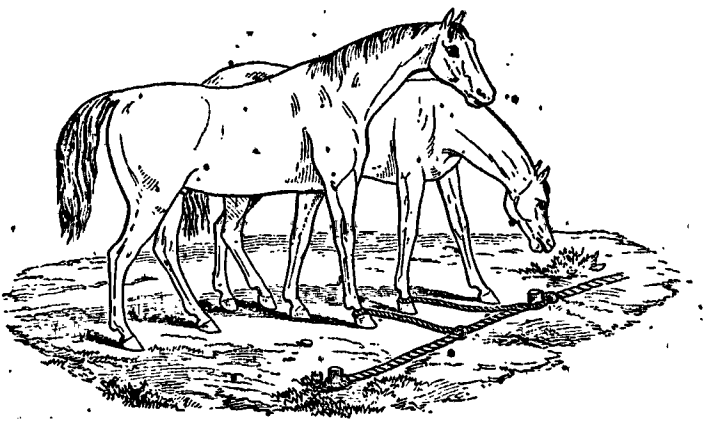
to pins, as shown in the figure. The two pieces of cloth are then buttoned together, and thrown over the rope between the sticks; their lower edges are secured to small pins: the roof of the shelter is thus complete. Generally 3 men unite to form one shelter; the third man arranges his piece of cloth over the end of the shelter which is most exposed to the weather. If 5 men unite to form a shelter, it is made double the length shown in the sketch.

Sometimes jointed sticks are carried to support the shelter; sometimes stakes are cut on the ground; occasionally the musket is used for the purpose.

When the camp is somewhat permanent, it is usual to dig a little cellar and bank up the earth outside.

In the Crimea, the cavalry usually encamped in line, with two rows of picket-ropes, and a line of shelter-tents in front of and behind the picket-ropes; the arms and equipments between the shelters and the picket-ropes.

The picket-rope is stretched on the ground, and the horses secured to it by a hobble on the right fore-foot; the hobble is of leather, and about 3′ long; it buckles around the pastern-joint; sometimes the hobble is attached to a picket-pin, instead of a picket-rope.



The foregoing sketch shows this arrangement; it is spoken of by the French officers as being the best manner of securing the horses.

Officers' horses are on the flanks of the squadron picket-ropes; those of the field and staff are near the tents of their owners.

For the latter, rude stables are usually formed, by excavating to the depth of a couple of feet, banking up the earth around three sides, and then forming a roof and walls of brush.

When time and circumstances permitted, the same was done for the horses of the men,—especially in the winter. It was stated that a very slight protection of this kind produced very marked beneficial results. In this connection, I would remark that companies of cavalry ought always to be provided with a sufficient number of tools to enable them to improvise some such shelter in any camp at all permanent: any thing which partially protects the horses from the cold winds is of great service.

The French horses were blanketed in camp.

The sketch on page 358 is a section of the conical tent used by the French staff officers; it will be observed that it has low walls, and but one central pole.

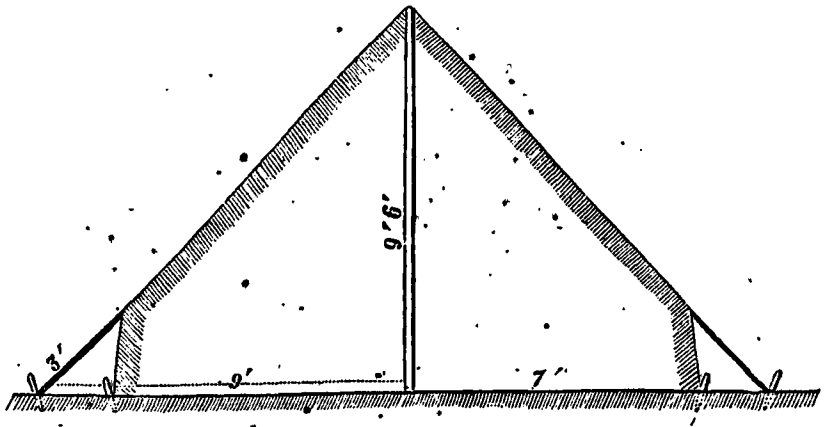
In the Crimea, the horses were fed 3 times each day; when the ration

was large, 4 times. They were watered twice a day,—early in the morning and at about 3 P.M.; sometimes but once a day.

They were cleaned twice a day.

The men of the African chasseurs never go to bed without cleaning and rubbing down their horses, whatever may be the weather and the hour of night when they reach camp.

On the march, each man carries 4 days' barley, 2 days' hay, and 4 days' rations for himself.



When going into action, the men, whenever it is possible, leave their forage-rations, cooking-utensils, &c., in charge of a few men, or the dismounted men, retaining only cloak, arms, and ammunition; for a division to effect this requires about half an hour.

There are always a number of dismounted men to take care of baggage-animals, act as officers' servants, &c.

The daily service, manner of performing outpost duty, &c., vary with circumstances, and are regulated in orders by the general of division. For some six months, during the first winter in the Crimea, the horses were kept saddled all day; in the fall of 1855 there was but one squadron on outpost duty on the Tchernaya; the horses of the other squadrons were at their picket-ropes, unsaddled. Of the squadron *on duty*, one-half was in advance of the Tchernaya, saddled and bridled; it threw out vedettes and pickets; the other half remained in bivouac south of the stream, saddled, but not bridled. The vedettes were always double, and relieved every hour, or two hours,—according to the weather; if any thing occurred, one vedette rode in to inform the picket, the other remaining at his post to watch.

In the African chasseurs, the men being old soldiers, less minute attention to details was required from the officers: for instance, if it was intended to start at 4 in the morning, it was only necessary to announce the fact to

the men; the hour for rising, feeding the horses, breakfasting, &c., need not be specified, but the men can be trusted to be in the saddle at the hour appointed.

In order to arrive at the end of a march sooner, and thus give the horses more time to repose, a part of the march is usually made at the trot, not faster than 5 miles an hour; the horses must be brought to a walk 20 minutes before every halt, and one hour before reaching camp.

In crossing long and steep slopes, the men dismount; but they must not dismount and mount very often.

The march ought not to be greater than from 25 to 31 miles.

Very full instructions as to the manner of conducting marches, and the general duty in the field, are to be found in the French regulations; in practice, these regulations are followed as closely as circumstances will permit.

The cacolets, mentioned when giving the allowance of transportation, are mule-litters; each mule carries two, slung on each side of an ordinary pack-saddle; their frame is of jointed iron, and can be arranged either in the form of a chair for those who are but slightly wounded, or as a couch for more severe cases. They are well worthy of examination for adoption in our own service, in cases where commands move without wagons; they will be found to be described in the report of another member of the commission.

TRANSPORTATION OF MEN AND HORSES BY SEA.

The American vessels, the Great Republic and the Monarch of the Seas, were fitted up at Marseilles by the French government as horse-transports, and present good examples of the system pursued; the arrangements were the same in both.

The Great Republic is 317′ by 53′ over all, 30′ hold, tonnage 3,424; she has carried 497 horses and 500 men at the same time; 240 horses on each "between-decks," the rest on the spar-deck.

A donkey engine, of 8-horse power and 12″ stroke, was employed to hoist the horses in and out; a load of horses taken in, or discharged, at the rate of 1 horse per minute.

In one voyage, of 21 days, out of 497 animals, 9 horses and 4 mules were lost; most of these were sick when brought on board, and suffered much from the heat at Malta.

Three additional ventilating-ports were cut on each side of each deck; three weeks were occupied in putting up the stalls.

The Monarch of the Seas is of 2,360 tons burden.

She carries 300 horses, or 950 soldiers and 28 officers; loads and discharges, by means of a donkey engine of 8-horse power, at the same rate as the Great Republic. The cost of putting up the stalls was about $8,000.

On one voyage she lost about 20 horses out of 300. Out of 3,000 horses, carried at different times, she lost about 30 in all.

In all the transports the government furnished the forage; the ships fed the men under a contract.

The loading was under the direction of government employés; the captain of the vessel regulated the extinction of lights, &c.

It is considered best to transport horses on board of large sailing-vessels, towed by steamers, thus avoiding the heat of the engine, &c.

The lower deck is regarded as best for the horses.

The horses are cleaned once a day; fed and watered twice: these details are regulated by the officers of the troops.

The horse equipments, &c., are placed at the ends of the decks.

Horse medicines were brought on board by the veterinaries on duty with the troops.

When the vessel is "end on" to the wharf, a bridge of decked flat-boats is made from the shore, and the horses walked alongside; the slings are then put on, and the animals hoisted in, with the saddle and entire equipment on them.

The sling used on board ship does not differ materially from that employed in the English service; when used for hoisting in and out, a breeching and breast-strap are employed.

On the voyage the sling is used only in bad weather, when the horses become fatigued.

The sea-halters are of rope, with two halter-ropes.

The sketches on page 361 give the form and dimensions of the stalls.

The breast and tail boards are nailed to the stanchions, and are 3″ thick; the side-boards slip in grooves. The heads of the horses are towards the middle of the ship.

The stalls are 28″ wide, and 5′ 10″ long in the clear between the pads.

The pads are of canvas, stuffed with hair; they were too thin.

The feed-troughs of wood, and hung to hooks on the front of the breast-board: they are 22″ long, 7″ deep, 10½″ wide at top, 7½″ wide at bottom,—all these dimensions in the clear; the edges covered with sheet zinc. For each sling there are two sling bolts and rings, attached to planks spiked to the joists.

To each halter-ring two halter-ropes, of adjacent horses, are attached. The flooring of the stalls is of inch boards, resting flat on the deck; long cleats in front and rear, as shown in the figures, and cross-cleats, parallel to the length of the stall, under each side-board, are nailed to the floor; this flooring cannot be taken up while the horses are on board.

The stale passes out through the scuppers as best it can. The hatches are always kept open.

It will be seen that the arrangement of the stalls is such that a single

Fig. 1.

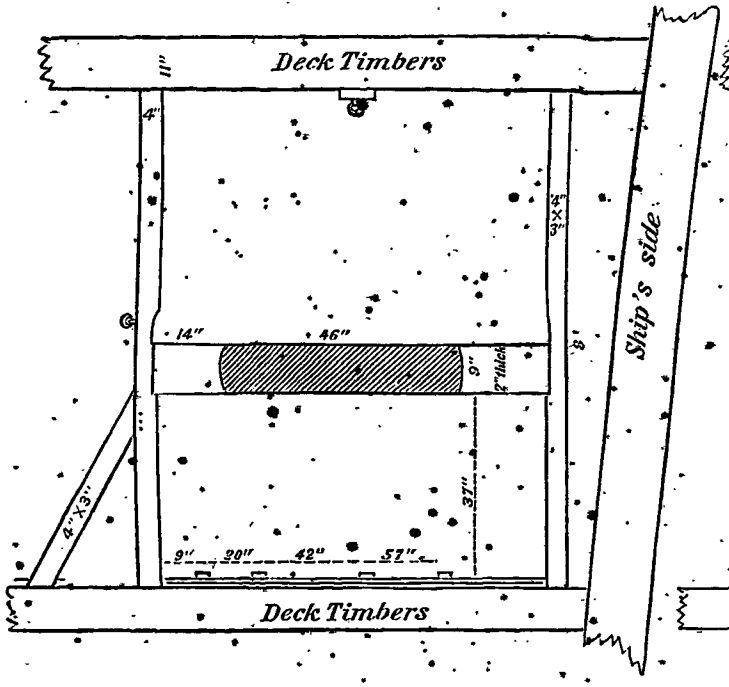


Fig. 2.

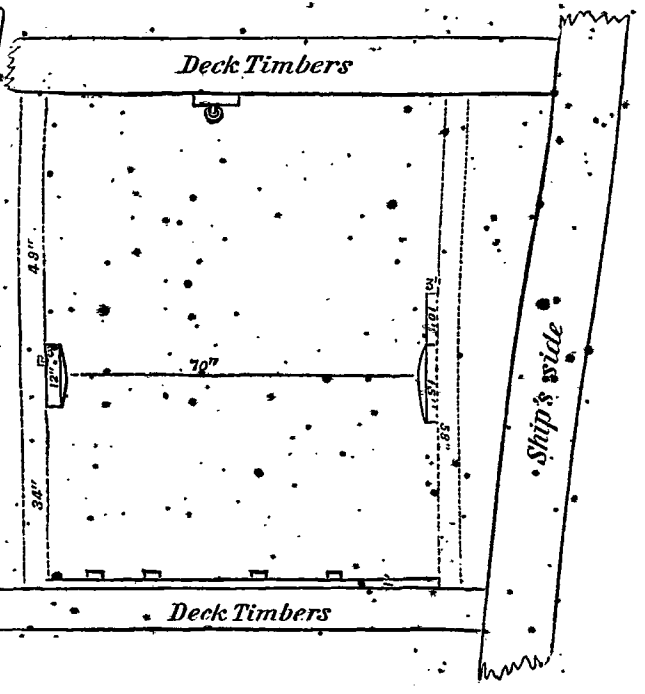


Fig. 1 represents the elevation of a stall, showing the stanchions and side-boards.
Fig. 2 represents a section through the axis of a stall, and shows the breast and tail boards.

horse cannot be removed from the middle of a row without first removing all the others between him and one end, or else sawing off the breast-board; this and the arrangement of the flooring are objectionable.

It will be seen hereafter that these defects are obviated in the English system, which will be described in its proper place, and which may safely be taken as a model.

When horses are carried on the spar-deck, they are placed in movable box stalls.

The men sleep about the decks, as they best can, in their overcoats; blankets are sometimes given them,—especially if they are sick. Neither bunks nor hammocks are provided. The rations of the men on board ship are as follows:—

Breakfast, 6½ ounces of bread, $\frac{1}{10}$ pint of brandy or rum, $\frac{7}{10}$ ounce of coffee, $\frac{9}{10}$ ounce of sugar.

Dinner, 6½ ounces of bread, $\frac{4}{10}$ pint of wine; either 8¾ ounces of salt beef or $7\frac{9}{10}$ ounces of pork, $2\frac{1}{10}$ ounces of potatoes, peas, or beans, or 1 ounce of rice, or $4\frac{2}{10}$ ounces of cheese.

Supper, 6½ ounces of bread, $\frac{4}{10}$ pint of wine, $4\frac{2}{10}$ ounces of Chollet vegetables, or 2 ounces of rice.

VETERINARY SCHOOLS.

Of these there are three: one at Alfort, near Paris, one at Lyons, one at Toulouse,—all under the minister of agriculture, commerce, and public works. At Alfort there are 40 pupils, sent by the war department, who supply about 40 veterinaries per annum for the army; as this number is insufficient, the graduates from civil life frequently receive appointments.

These institutions are all conducted on the same principles: that at Alfort, however, is the most extensive, and probably the best; a description of that at Lyons will give a sufficiently accurate idea of the general nature of all.

At this there are 150 pupils, admitted between the ages of 17 and 25, and paying $80 per annum.

They are required to pass a preliminary examination, at which they must show that they can forge a shoe in two heats, that they understand the French grammar, and can write, know arithmetic and the elements of geometry, and have a general knowledge of the geography of Europe, as well as a special acquaintance with that of France.

The pupils are divided into 4 classes, the course being of four years. For the two junior classes the course is purely theoretical, and they are required to study 8 hours a day; in the two senior classes it is partly practical, their presence in the study-rooms being required but 4 hours per day.

The members of the two senior classes have, each, one or more sick

horses assigned to their care, to which they administer the requisite medical treatment, under the supervision and according to the prescriptions of the professors. There is a clinique, or dispensary, whither sick horses are brought every day, the professors prescribing and making remarks upon the cases; each pupil has a book in which he records the prescriptions, remarks, and whole history of the cases; he retains this book when he leaves the school.

During the whole course the pupils are required to make shoes and to shoe horses.

The academic staff is as follows:

1. The director, who is also professor of anatomy and external diseases.
2. A professor of external pathology, surgery, and shoeing.
3. A professor of internal pathology, and botany.
4. A professor of hygiene, physiology, and sanitary police.
5. A professor of physics, chemistry, and pharmacy.

In addition there are three assistant professors.

The pupils reside in the establishment, and are kept under very strict discipline. When they pass their final examination they receive a regular diploma as veterinary physicians.

In the practice at this institution, the glanders is regarded as incurable, and the fleam is preferred to the spring lancet.

The boxes for very sick or large horses are 11′ 4″ wide, 14′ 9″ long, with a passage-way of 5′ in rear, and are about 15′ high; in front of the stables there is an iron shed 10′ 6″ wide.

The mangers are of stone; racks, of wood; floors, of hard brick, laid on the long edge; the divisions between the stalls are solid, and swing on pivots, so as to yield to the kick of the animal.

There are stables for cows; kennels for dogs, cats, &c.

There are also dissecting-rooms,—animals being purchased and killed for the purpose.

The library has a reading-room attached, and contains general scientific works, as well as those relating especially to the veterinary art.

The collection of instruments for experiments in natural philosophy is fair.

There is a small anatomical museum, in which are found nearly all the admirable models made by Dr. Augoux; these represent the teeth, bones, intestines,—in fact, all parts,—of the horse, as well as complete models showing the whole external and internal structure of the animal. They are made of a material not unlike papier-maché, and are durable and accurate.

These models are in general use throughout Europe, and are regarded as indispensable in a veterinary school.

Specimens were purchased by the commission; and I would urgently

recommend that complete sets be procured for the military academy, the cavalry depot, and for general use in the service.

In the botanical garden are found specimens of all proper and noxious aliments for the horse, medicinal plants, &c.

The forges in the shoeing-shop are of iron, and well arranged; the tools present nothing peculiar.

The method of cold-shoeing is pursued here, as is universally the case in the French government establishments. This process will be fully explained when describing the farrier school at Saumur.

CAVALRY SCHOOL AT SAUMUR.

This is the most perfect and extensive institution of the kind in Europe,—perhaps the only one really deserving the title, the others being more properly mere schools of equitation.

It is situated on the Loire, in the department of the Maine and Loire, a region in which forage abounds, and where the climate is such that exercises in the open air are seldom interrupted.

The organization and purposes of the school cannot be better described than by giving extracts from the "Decree of Reorganization," dated October, 1853:

"The purpose of the cavalry school is to form instructors, intended to diffuse through the corps a uniform system of instruction in every thing relating to the principles of equitation, and other branches of knowledge appropriate to the cavalry arm.

TITLE I.

OBJECT OF THE SCHOOL AND DIVISION OF INSTRUCTION.

ARTICLE 1. The instruction at the cavalry school is entirely military, and is based upon the laws and regulations in force with regard to the mounted troops. It includes—

1st. The regulations for interior service.

2d. The cavalry tactics.

3d. The regulations for garrison service.

4th. The regulations for field service applied, as far as possible, on the ground, especially with regard to reconnoissances.

5th. A military and didactic course of equitation, comprising all the theoretical and practical knowledge required for the proper and useful employment of the horse, his breaking, application to the purposes of war, and various civil exercises.

6th. A course of hippology, having for its object practical instruction, by means of the model breeding-stud attached to the school, in the prin-

ciples which should serve as rules in crossing breeds and in raising colts, to explain the phases of dentition, to point out the conformation of the colt which indicates that he will become a good and solid horse, the method to be pursued to bring the colt under subjection without resistance, and, finally, to familiarize the officers and pupils with all the knowledge indispensable to an officer charged with the purchase and care of remount horses. This course will also include notions concerning the horse equipment, which will be derived from an examination of the saddle-factory connected with the school.

7th. Vaulting; fencing, and swimming.

ARTICLE 2. The number of horses is fixed by the minister of war, according to the wants of the service; the number of troop-horses is fixed by table A, appended to this decree.

The number of young horses, for breaking, is fixed at 100 as a minimum. These last horses, as soon as their education is complete, are sold or given, according to the orders of the minister of war, to those officers who need a remount,—in preference, to officers of the general staff and staff corps, those of the artillery, and mounted officers of infantry.

These officers may also select from among the other horses of the school, with the approval of the commandant of the school.

ARTICLE 3. The pupils at the school are:

1st. Officers for instruction.

2d. Sergeants for instruction.

3d. Corporals for instruction.

ARTICLE 4. The full number of the divisions of officers, sergeants, and corporals for instruction is as follows:

Officers for instruction,	2	divisions	(effective)	 100
Sergeants	" 1	"	"	 40
Corporals	" 4	"	"	 240

ARTICLE 5. The pupils are sent to the school by order of the minister of war. They continue to be counted in their corps, from which they are considered detached during their stay at the school. They receive additional pay.

TITLE II.

COURSE OF INSTRUCTION.

ARTICLE 6. The courses of instruction are divided into 2 years.

Upon their admission, the pupils take up the first year's course; when they have passed the examination at the close of that year, they enter upon the course of the 2d and final year.

ARTICLE 7. In case of interruption from sickness, pupils may repeat one year's course. No one can remain more than 3 years at the school.

ARTICLE 8. A council of instruction is charged with the direction of the studies. They propose useful changes, and direct the progress of the studies. They are charged with the examinations.

TITLE III.

THE DIVISIONS FOR INSTRUCTION.

SECTION 1.

Officers and sergeants for instruction.

ARTICLE 9. The officers for instruction are selected from the regiments of cavalry and artillery, as well as from the squadrons of the trains of the parks and military equipages. Every year the inspectors-general designate the lieutenants and sub-lieutenants who can profitably follow the course at the school. The lieutenants selected must not be more than 36 years of age, the sub-lieutenants not more than 34.

The sub-lieutenants, who are graduates of the special military school, must have served at least 2 years with their regiments before being sent to the cavalry school.

ARTICLE 10. The sergeants for instruction are selected from the artillery. Every two years the inspector-general designates sergeants of the regiments of artillery and the squadrons of the park-trains to be detached from their corps as sergeants for instruction.

ARTICLE 11. The officers and sergeants sent to the school for instruction take their horses with them, and use them in the military exercises.

ARTICLE 12. Those who, after six months' trial at the school, are found to be deficient in the necessary qualities, are sent back to their regiments.

ARTICLE 13. Upon the recommendation of the inspector-general of the school, the officers serving there as pupils compete for promotion by choice with the officers of the corps from which they are detached.

ARTICLE 14. The cavalry lieutenant for instruction who graduates first in his class is presented for the first vacancy as captain instructor that occurs in the cavalry, provided he has the seniority in his grade demanded by the law.

The cavalry lieutenant who graduates second obtains, under the same conditions, the 2d vacancy of captain instructor, provided the division to which he belonged consisted of more than 30 members. The sub-lieutenant for instruction who graduates first of his grade, provided he is not lower than 10th in the general classification of the officers of both grades, is presented for promotion to the first vacant lieutenancy that occurs in his regiment.

ARTICLE 15. Those who remain 3 years at the school are not entitled to the benefits of the preceding article.

SECTION 2.

Corporals for instruction.

ARTICLE 16. They are designated every year, by the inspectors-general, in the regiments of cavalry and the squadrons of military equipages, from among those who have the greatest aptness for equitation, and are most deserving on account of their conduct, instruction, zeal, and intelligence; those who are recommended for promotion in their corps are selected in preference.

They must not be more than 25 years old.

They are sent to the school, by order of the minister of war, on the 1st of April of each year.

They remain connected with their corps, from which they are regarded as detached, and leave their horses there.

ARTICLE 17. The corporals compose 2 squadrons, commanded by captains on the staff of the school, who have officers for instruction under their orders.

ARTICLE 18. The corporals for instruction, although acting in the ranks, continue to wear the distinctive marks of their grade, and receive the pay of corporals of cuirassiers.

ARTICLE 19. Those corporals who, after spending 6 months at the school, do not evince the necessary qualifications, are sent back to their regiments.

ARTICLE 20. When they have passed their final examination, the corporals for instruction are promoted to be sergeants, vacancies having been reserved for them in their own regiments, to which they consequently return.

Those who at the examination at the close of the first year are in the highest third part of their class, and have distinguished themselves by their zeal and good conduct, may be at once promoted to be sergeants in their regiments, and perform the duties of that grade in the squadrons of the school; they receive the pay and wear the distinctive marks of their new grade.

Those corporals whose final examination is not satisfactory will be sent back to their regiments as corporals, unless they are especially authorized to spend an additional six months, or a year, at the school.

ARTICLE 21. The corporals who graduate among the first ten of their class are placed on the list of sergeants for promotion as sub-lieutenants, as soon as they have completed the two years' service as sergeants required by law.

TITLE IV.

STAFF OF THE SCHOOL.

SECTION 1.

Composition of the staff.

ARTICLE 22. The staff of the school is composed as follows:

1 general officer, as commandant.
1 colonel, as 2d commandant.
1 lieutenant-colonel.
1 chief of squadrons.
1 major.
10 captains, instructors, { of whom 3 command the squadrons. / 2 perform the duty of captain adjutant. / 2 in charge of the instruction of the officers. / 1 in charge of the special course of the sergeants. / 1 as assistant to the chief riding-master in the school for breaking young horses. / 1 supernumerary to supply vacancies.
1 captain, treasurer.
1 captain of clothing.
1 director of the saddlery, either a captain or lieutenant.
1 assistant treasurer, either a lieutenant or sub-lieutenant.
1 standard-bearer, either a lieutenant or sub-lieutenant.
1 veterinary of the 1st or 2d class.
1 assistant veterinary of the 1st or 2d class.
4 non-commissioned adjutants, { 3 for duty with the squadrons. / 1 wagon-master, also in charge of library.
5 first sergeants, { 3 for duty with the squadrons. / 1 master farrier. / 1 master saddler.
13 sergeants, one of whom is fencing-master.
4 quartermaster-sergeants, one of whom is attached to the saddlery.
1 corporal, trumpeter.
2 corporals, farriers.
2 corporals, saddlers.
3 corporals, provosts.

ARTICLE 23. The employés in the riding-halls, academy, and model stud, are military or civil; their rank and precedence are as follows:

1 chief riding-master, ranks as chief of squadrons.
5 riding-masters, who rank as captains; one of these may be the director of the stud, and professor of hippology.
3 assistant riding-masters, who rank as lieutenants or sub-lieutenants.
1 master of the riding-halls, ranks as non-commissioned adjutant.
4 assistant masters of the riding-halls, 1 of whom ranks as first sergeant, the others as sergeants.

The direction of the breeding-stud, and the course of hippology, may be intrusted to a civil or military professor other than a riding-master, or to a military veterinary.

ARTICLE 24. The medical staff is as follows:
1 chief surgeon.
1 surgeon of the 1st or 2d class.
1 assistant surgeon of the 1st or 2d class.
1 chief apothecary, or assistant apothecary.
1 hospital intendant.
3 principal hospital attendants.
7 hospital attendants.

ARTICLE 25. There are attached to the school—
1 sergeant, as master armorer.
1 sergeant, as master saddler.
1 sergeant, as master tailor.
1 sergeant, as master boot-maker.

ARTICLE 26. The officers composing the staff are authorized to have the number of horses allowed their grade, with the exception of the intendants and medical officers, who are only authorized to have their government horses.

ARTICLE 27. Upon the recommendation of the council of administration, the minister of war determines the number and duties of the administrative employés attached to the school; also the number of subordinate agents."

For additional information I would refer to the copy of the decree of reorganization accompanying this report.

The captains-instructor of the cavalry regiments, and the instructors of equitation in the artillery regiments, are mostly selected from the graduates of this institution.

In addition to the subjects mentioned in the decree, the non-commissioned officers are instructed in the theory of administration and accountability.

The text-books are as follows: The Hippology of M. St. Ange; the Equitation of M. d'Aure; the Tactics and Regulations.

The recitations are by sections of about 30 in each.

In reciting upon the general principles of tactics, equitation, hippology,

&c., the manner is as at our Military Academy; when reciting upon the movements in tactics, all the commands and explanations of the instructor to the troops are repeated "verbatim et literatim," and in the tone and pitch of voice used in the field.

Perfect uniformity of tone and manner is required, and thus obtained; the object of reciting in this manner is to teach the pupils the proper tone and pitch of voice, to accustom them to hear their own voices, and to enable them to repeat the text literally at this pitch of voice, without hesitation or mistake.

The course of hippology includes the structure of the horse, the circulation of the blood, organs of respiration, &c., food, working-powers, action, breeds, manner of taking care of him, ordinary ailments and remedies, shoeing, lameness, saddling, sore backs, sanitary police, &c., but does not compriso a complete veterinary course.

The Augoux models are employed, in preference, for demonstrations, and are considered invaluable.

The officers on the staff of the school, and those for instruction, lodge in the town; the non-commissioned officers are quartered in the barrack.

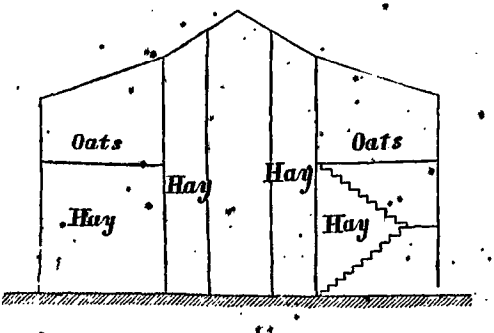
The hospital is for both officers and non-commissioned officers.

In the kitchens, the Choumara marmites are used.

The stables have already been described.

In accordance with the system how adopted in France, the prison consists of small cells, opening upon a corridor which communicates with the guard-room; the system of solitary confinement is resorted to as the only one of any avail. Each prisoner has a bunk, mattress, pillow, and blanket, belonging to the prison. At Saumur the prisoners are obliged to have some of their text-books with them.

Forage-magazine.—The following sketch represents a section of the forage-magazine; there is a staircase at each end. The oats are kept loose on the floor, in a mass about 3′ deep; a winnowing-machine is provided for cleaning it before issue.



The hay is purchased in trusses of about 15 lbs. each, and is put up, at the magazine, in trusses of a ration each, by hired men. The straw is stacked in piles about 40′ high, in the open air; a wall surrounds the whole establishment. Four months' supply is usually kept on hand. The purchase and issue are in the hands of an officer of the intendance.

Riding-halls.—There are three of these, the largest being 280′ long, 105′ wide, and 25′ high. The roof-truss of wood, supported by wooden arches, which extend nearly to the floor.

The galleries in the middle of the long sides, the entrance-doors at the ends. There is no wainscot, nor are the corners rounded off. The floor is of sand and tan.

The large riding-hall is stated to be too large for the mere riding-drill, and is sufficient for instruction in the first two articles of the platoon drill; it was also stated that it would be desirable to have it large enough for all the lessons of the platoon drill. The second riding-hall is about 216′ × 60′, and is of a good size for the riding-drill. The best shape for a riding-hall is said to be,—the width one-third of the length. Near the large riding-hall there is a target, placed against a brick wall. They practise at this with pistol, carbine, and musket; at first on foot, afterwards on horseback.

The carbine is said to be worthless, because it is inaccurate and is apt to burn the horse's ears. No very satisfactory results have been obtained with the use of the musket on horseback.

Hurdles about 2½ feet high are placed near the target; they are made of very flexible withes, in order not to trip the horse if he strikes.

The practical exercises consist of: The ordinary riding-hall drill, including vaulting, the "kickers," &c.; the carrière, or out-door riding at speed, over hurdles, ditches, &c.; cutting at heads; target-practice; fencing; swimming; the usual military drills; skeleton squadron and regimental drills; rides in the country; finally, in the summer, frequent "carrousels" or tilts are held.

The English saddle and bridle are much used by the officers. The saddle for the "kickers" has a high pommel and cantle, and no stirrups.

The Baucher system was fully tried at Saumur, and I was informed that it proved to be inapplicable to the general service. Some few persons, exceptions to the general rule, did wonders with it; but it generally did harm, and is regarded as a very dangerous system in the hands of most officers and men; it is not at all in use at Saumur, or anywhere else in the French service. I will here take occasion to repeat that I took especial pains to make inquiries, in relation to the Baucher system, of the cavalry officers of all the countries we visited, and that the reply was uniformly the same: that is, that certain parts of the system (those relating to obtaining command of the muscles of the head and neck) were good, and could be applied with advantage by individual officers to their own horses, but that the system would never answer for general introduction in the service.

In addition to what is stated in the decree of reorganization, it should be said that the non-commissioned officers sent to the school must have

served as such at least one year; and that those who attend the school as non-commissioned officers frequently return as officers for instruction, and again in a higher grade on the staff of the school. The officer now second in command has been at the school in every grade down to that of lieutenant, inclusive. Officers transferred from the infantry to the cavalry are generally sent to this school for a short time at least.

The veterinary surgeons of the lowest grade are sent here upon their first appointment to receive instruction in equitation, to profit by the study of the model stud, and to learn the routine of their duties with the regiments; they form a separate class, under the direction of the stud. In the *Model Stud* (Haras des Études) the number of animals varies. There are usually two stallions and about twenty mares, in addition to those selected from time to time from among the riding-animals. At the time of my visit one of the stallions was a superb Arab; among the mares were Arabs, English, Norman, &c. Each animal has a box about 15′ square.

The object of this establishment is explained in the "decree." Attached to it is a botanical garden, more especially for useful and noxious grasses and plants.

The horses of the school are divided into two sets,—one for the riding-hall, the other for military drills; there are about 240 of the former and 600 of the latter. The former are groomed by hired men, the others by soldiers of the remount companies, who do not belong to any regiment.

Each man has four horses to take care of, and has nothing else to do. The horses at the school have a somewhat larger allowance of forage than in the regiments, and are far better animals than the majority in the service.

SCHOOL FOR BREAKING YOUNG HORSES.

The object of this establishment is explained in the decree. The best horses purchased at the remount depots are selected for the officers, and sent to this place to be trained.

A school for trumpeters existed at Saumur prior to the war; soon after the commencement of the war it was broken up,—to the regret of all the officers.

SCHOOL OF FARRIERS.

This is attached to the cavalry school, and is under the direction of the commandant. Private soldiers who have served at least six months with their regiments, and are blacksmiths or horseshoers by trade, compose this school. There are usually two men from each mounted regiment; during the war the number was reduced to one from each regiment. The course lasts two years. It comprises: reading, writing, arithmetic, equitation, the anatomy of the horse, thorough instruction as to all diseases, injuries, and deformities of the foot, something of the veterinary

art in general, the selection of metals, making shoes, nails, tools, &c., shoeing horses.

The printed work on farriery (Cours de Maréchalerie, à Saumur) gives the course as taught.

This establishment has a large shoeing shop and yard, with some 12 or 15 forges, a recitation-room, museum, and store-rooms. In the recitation-room there are skeletons of horses, men, &c., as well as some admirable specimens of natural preparations in comparative anatomy, a complete collection of shoeing-tools, specimens of many kinds of shoes, &c.

In a recitation of the lowest section I heard a very good explanation of the skeleton, muscles, foot, process of shoeing, use of the "perpendiculars," &c., from different pupils.

This school has been in existence since 1826, and has produced most satisfactory results. Since that year the census returns have shown, it is stated, a diminution of 40 per cent. in the number of lame horses in France,—a result attributed to the good instruction spread through the country by means of this school; for the pupils, upon leaving the service, generally establish themselves as farriers in their native villages.

All the horses of the school are shod here; also those of the inhabitants of the town and its vicinity; the money thus earned pays the expenses of the school.

The shoes are made altogether by hand, and are rather rough.

For small feet, 6 nails are used; for those of medium size, 7; for large feet, such as those of cuirassier horses, 8.

As the regulations require the method of cold-shoeing to be used in the French army, that alone is used here, and is as follows:

The old shoe is removed, and the foot prepared to receive the new shoe. An exact impression of the foot is then taken on a sheet of paper, which is laid against the sole of the foot, and pressed against the edge of the foot by the hand.

The podometer (which is either a thin, flexible bar of lead, or a chain of short, stiff, bar links) is now employed; this is bent to the exact shape of the impression on the paper, and serves as a guide and measure in forging the shoe.

This impression is taken once for all, for each horse.

In the regiments, each farrier has a register, at the head of each page of which are inscribed the name and number of a horse; below are traced the impressions of his fore and hind feet, which can always be reproduced by means of the podometer, or a paper form. Any necessary remarks, as to peculiarities of the horse's foot, and directions for shoeing him, are inscribed by the veterinary. A note is made in the register every time the horse is shod.

No shoe should remain on more than from 30 to 40 days.

By means of this register the farrier prepares, at his leisure, four shoes for each horse, which number should always be on hand; the veterinary inspects them, sees the nail-holes punched, and has them marked with the number of the horse.

On the march, every man must be provided with 4 shoes thus fitted, also with two sets of nails.

The horses are not taken to the forge to be shod, but the operation is performed wherever they happen to be.

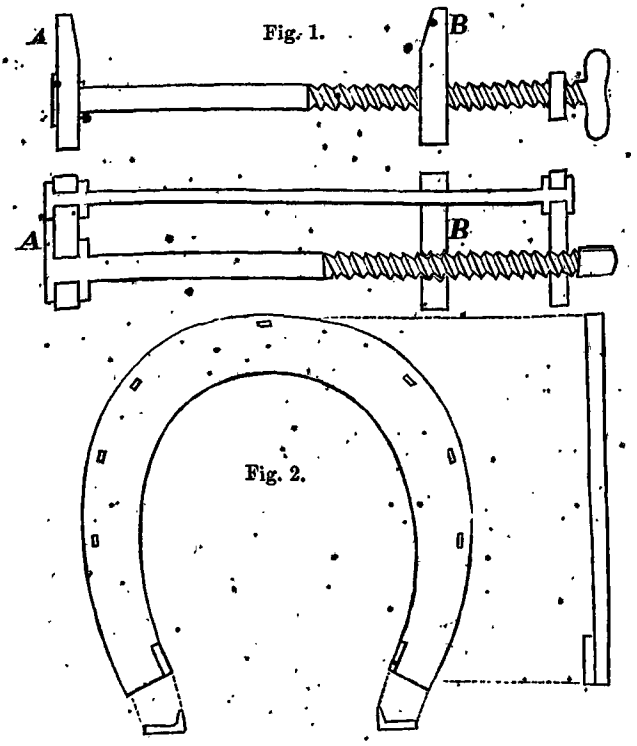


Fig. 1.

Fig. 2.

In garrison, they leave the stable only long enough to have the old shoe removed, the hoof trimmed, and the new shoe nailed on.

At Saumur, the registers belong to the school, and not to the farriers; the horses, too, are generally taken to the shop to be shod.

Another register is kept here, in which is recorded the work done every day, giving the names of the horses, or of their owners, the number of shoes put on, and on what foot, also the names of the men doing the work, so that they may be held responsible for any work badly done.

I observed at this school an arrangement for curing contracted heels;

it is said that by means of it very bad cases are permanently cured in a few months.

The sketches on page 374 show the arrangement.

The instrument represented by figs. 1 and 2 is applied to the bars of the hoof; turning the screw, the piece B recedes from A, and thus opens the heel; a shoe, arranged with clips, as shown in the sketch, is then put on, and the clips retain the bars in their new position.

The hoof is opened a very little at each shoeing; it is necessary to be very careful in the application, and not to open the heels too much at once,—from $\frac{4}{100}$ to $\frac{8}{100}$ of an inch at a time. It is sometimes necessary to rasp down the hoof and soak it in oil, to render it more pliable.

I was informed that perfect success attends this operation: in fact, they showed me the impressions of hoofs, badly contracted originally, taken at different times during the process, and then one of the horses with heels apparently in good condition, and without clips on the shoes.

It ought, however, to be stated that a similar process is referred to by Youatt, (page 308, Skinner's edition,) and that his conclusions are entirely against the efficiency of any such process. I give the thing for what it may be worth.

Since I visited Saumur unaccompanied by the other members of the commission, I feel that it would be improper to close my notes upon the school without calling the attention of the Secretary of War to the extreme courtesy and kindness I met with on the part of all the officers of the school. By General de Rochefort, the commandant, and Colonel Schmidt, the 2d commandant, I was placed under great obligations by their personal attentions, and the patient kindness with which they—especially the latter—accompanied me through the different parts of the establishment, and laid open all things for my examination.

List of works, by French authors, or translated into French, of especial value to cavalry officers.

Bugeaud; Instructions Pratiques, pour les Troupes en Campagne.
Bismank; Tactique de la Cavalerie, (trad. par Schauenberg.)
Braek; Avant-Postes de Cavalerie Légère.
Cours d'Equitation Militaire de l'École de Saumur.
Cours de Maréchalerie de l'École de Saumur.
Cours d'Hippologie—par St. Ange.
Decker; Tactique des Trois Armes, (trad. par de Brack.)
Decker; Traité de la Petite Guerre.
Fréderic II (le Grand); Instructions aux Troupes Légères, &c.
Jacquinot de Prêsle; Cours d'Art et d'Histoire Militaire.
La Roche Aymon; Manuel de Cavalerie Légère en Campagne.
Maurice de Saxe; Mes Rêveries, ou Mémoires sur l'Art de Guerre.

Memorial des Officiers d'Infanterie et de Cavalerie.

Muller; Théorie sur l'Escrime à Cheval.

Ordonnance sur le Service Intérieur des Troupes à Cheval.

" " " des Armées en Campagne.

" " " de Cavalerie en Campagne.

" " " des Places—pour la Cavalerie.

Schauenberg; De l'Emploi de la Cavalerie à la Guerre.

Des Principes qui servent de Base à l'Instruction etc. de la Cavalerie —par M. F. d'Aldéguier.

The following are standard works on the veterinary art:

Dictionnaire de Médecine, de Chirurgie, et d'Hygiène Vétérinaire, par M. Huetel d'Arboval, 6 volumes.

Traité de Médecine Vétérinaire Pratique—par L. V. Delwast, 3 volumes.

Nouveau Dictionnaire Pratique de Médecine, de Chirurgie, et d'Hygiène Vétérinaire, par MM. Bouley et Reynal.

Recueil de Mémoires et d'Observations sur l'Hygiène et la Médecine Vétérinaire Militaire; publié par ordre du Ministre de la Guerre, 6 volumes.

Dictionnaire d'Hippiatrique et d'Equitation; par Cardini, 2 volumes.

Much valuable and interesting information as to the history of the horses and haras in France is to be found in a published report, entitled Conseil Supérieur des Haras, Rapport sur les Travaux de la Session de 1850, fait par M. le Général de la Moricière.

ENGLISH CAVALRY.

THE English regular cavalry consists of:
3 regiments of household troops—cuirassiers;
7 regiments of heavy dragoon guards;
3 regiments of heavy dragoons of the line;
4 regiments of light dragoons of the line;
5 regiments of hussars;
4 regiments of lancers;
1 regiment of Cape mounted riflemen.

The regiment of mounted riflemen has 12 troops; the other regiments have 6 or 8 troops each, formed, respectively, into 3 or 4 squadrons.

The troop is the unit of interior service; the squadron is that of tactics.

The usual strength of a troop of the guards is: 1 captain, 1 lieutenant, 1 cornet, 5 sergeants, 1 trumpeter, 1 farrier, and 42 corporals and privates; in other regiments, serving at home, the number of corporals and privates is increased to 58; regiments serving in India, and similar stations, have 1 additional lieutenant and 70 corporals and privates.

The regimental staff consists of: 1 colonel, 1 lieutenant-colonel, 1 major, 1 paymaster, 1 adjutant, 1 quartermaster, 1 surgeon, 1 assistant surgeon, 1 veterinary surgeon, 1 sergeant major, 1 chief trumpeter, 1 armorer, 1 chief saddler, 1 schoolmaster sergeant, 1 hospital sergeant, 1 regimental clerk, 1 paymaster's clerk.

Some regiments have 2 lieutenant-colonels and 2 majors.

TACTICS AND INSTRUCTION.

The squadron is composed of two troops, and is divided into 4 divisions. It is formed in two ranks, half a horse's length (4′) apart; the files have intervals of 6″ from knee to knee.

The squadron-intervals are equal to the front of a division; those between regiments are the same, allowing, in the order of parade, the additional space necessary for the band and staff.

In the squadron the officers, &c., are posted as follows:

The commander of the squadron, (who is the senior captain of troop, and is called "squadron-leader,") one-half a horse's length in front of the

centre of the squadron; the commandants of the troops, (called "troop-leaders,") at the same distance in front of the centres of the troops; the 4th officer is posted, as a file-closer, (he is called "squadron serrefile,") one-half a horse's length in rear of the centre of the squadron; the 5th and 6th officers, (called "troop serrefiles,") at the same distance behind the centres of the troops; one sergeant, the standard-bearer, is in the front rank between the troops; 8 sergeants are on the flanks of the divisions, in the front rank, all covered by corporals or old soldiers; the 10th sergeant, as squadron-marker, is in the rank of file-closers, one horse's length on the right of the squadron serrefile; the trumpeters are in the rank of file-closers, behind the second files from the flanks of the squadron; supernumerary officers and sergeants and the farriers are distributed in the rank of file-closers.

The formations are by single file, by files, by sections of threes, and by threes, as in the Russian system.

The front of column is increased or diminished as in our own tactics.

The English tactics being easily obtained, and copies of it being in the possession of the War Department, it is deemed unnecessary to give extracts from it.

Much of the preliminary instruction is worthy of consideration: it is very concise; the commands are generally short, and it should by no means be passed over by officers engaged in the revision of our own tactics.

HORSE EQUIPMENTS, ETC.

The saddle has a lower cantle and pommel than our Grimsley saddle; it is covered with leather.

The snaffle-bit is attached to the halter-headstall by a chain and T; the curb has a separate headstall, which, on the march, is sometimes taken off and hung on the carbine-stock; the halter-shank is a chain, and is worn in the field.

No schabraque is worn; the pouches, valise, &c., present nothing peculiar.

There is a difference between the saddles for the heavy and light cavalry.

The cavalry are armed with the sabre, carbine, and pistol, with the exception of the lancers, who have two pistols and a lance in lieu of the carbine.

The sabre is long, and has a steel guard; it is formed rather for cutting than for thrusting.

Large numbers of the Drane & Adams' revolvers were being made at Liège for the English cavalry; none had been issued in the Crimea.

The Cape mounted riflemen have a sabre, pistol, and a carbine with a double barrel.

The carbine is carried in a boot, and has also a sling.

The cartridge-box is suspended from a shoulder-belt.

The heavy cavalry wear helmets; the light dragoons, shakos; the hussars, fur cylindrical hats, or shakos; the lancers, the czapka.

The cuirassiers have both breast and back plate.

The frock-coat was in course of adoption, but had been issued in the Crimea to only a few regiments.

In the Crimea, the cavalry had their full dress.

The horses of the English cavalry are large and excellent; for the heavy cavalry they leave nothing to be desired. It may be a question whether they have light cavalry, in the true sense of the term, except, perhaps, some of the regiments who have been serving in India and are mounted on Indian horses; for the men and horses of the light cavalry are scarcely to be distinguished from those of the heavy, and it may be doubted whether they would stand the severe work, exposure, and short rations which usually fall to the lot of light cavalry in campaign, as well as the less imposing but lighter and more active material of the light cavalry of other nations.

The horses are usually purchased for each regiment.

The animals in the Crimea in the fall of 1855 were mostly, I believe, remount horses, sent out during the spring and summer; they were generally excellent animals, of great power and weight, but, although in fair effective condition, they were hardly in the state that might have been expected considering the small amount of work they were required to perform. They were encamped upon broken ground, where but little regularity could be perceived in their arrangement.

The men were under canvas, the horses generally blanketed at the picket-ropes; in some few cases, exceptions to the rule, rough stables had been constructed.

The picket-ropes were about 2′ from the ground, and fastened to stakes some 20′ apart; the horses secured to them by the halter chain or rope.

The camp-equipage, cooking-utensils, &c., do not differ materially from those of the infantry, which are described in their appropriate place.

TRANSPORTATION BY SEA.

The Himalaya was regarded as the most perfect horse-transport; the following description is based upon notes taken during a visit to that vessel in the harbor of Balaklava:

She is an iron screw-ship of 3,000 tons and 700-horse power, and can carry 380 horses, as follows: on the spar-deck 200, main deck 130, orlop-deck 50; the corresponding number of troops can be carried at the same time.

The Himalaya was purchased by the government, and commanded by

Captain Priest, R.N. To the courtesy of that very intelligent officer we are indebted for the details contained herein.

Fig. 1 (page 381) is a section through the side-boards of a stall.

Fig. 2, a longitudinal section along the axis.

Fig. 3 is the plan of stall.

A represents the halter-rings.

B, the hook to which the sea-halter is hung when not in use.

C and E, projected buttons for securing the sling-ropes shown in fig. 5.

D, sling-bolt, for sling as shown in fig. 4.

F, hook to which the land-halter is hung.

Fig. 4.

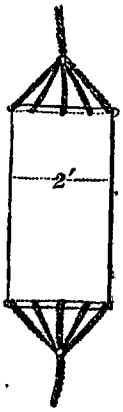


Fig. 4 represents the canvas sling used on the Himalaya. Fig. 5 represents the sling as recommended by Captain Priest, and which he intended to adopt.

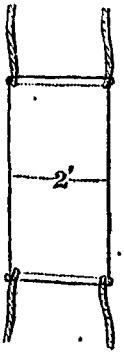
The tail-board, as shown in the sketch, is permanently attached to the rear posts, and extends to the floor; it is padded nearly to the bottom: it was intended to replace this by a board of the same width as the side-boards, and rounded off at top by a spar, 4½″ in diameter.

The breast and side boards all slip in grooves.

The side-boards are padded on both sides; the breast-board on top and towards the horse.

The material used is felt, or raw hide, (the latter objectionable on account of the odor,) stuffed with cow's hair wherever the animal can gnaw it, with straw in other parts; the pads were from 2″ to 3″ thick.

Fig. 5.



The feed-trough is of wood, the edges bound with sheet iron or zinc, and attached to the head-board by two hooks.

The feed-troughs, head-boards, and stalls are whitewashed and numbered.

The floor of the stalls is raised above the deck on buttons, and is divided into separate platforms for every two stalls, so that it can easily be raised to clean the deck beneath; 4 strong buttons are nailed across, to give the animals a foothold.

In front of each head-post there is a halter-ring.

The sea-halter is made of double canvas, 2″ wide, and has two ropes, so that by fastening one to each post the animal's head may be kept still and he cannot interfere with his neighbor.

The slings are of canvas, of the shape and dimensions given in the figures. On the main and orlop decks the sling-ropes are attached to sling-bolts; on the spar-deck, to a button.

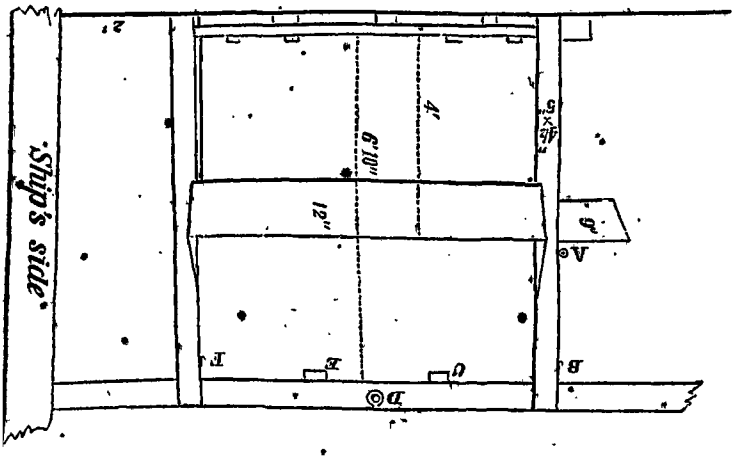


Fig. 1.

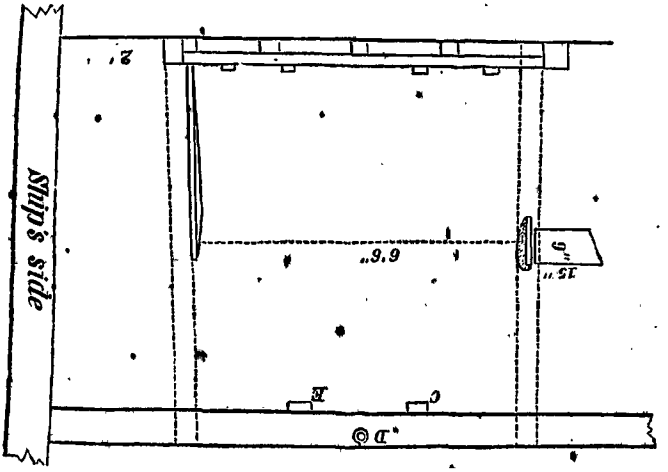


Fig. 2.

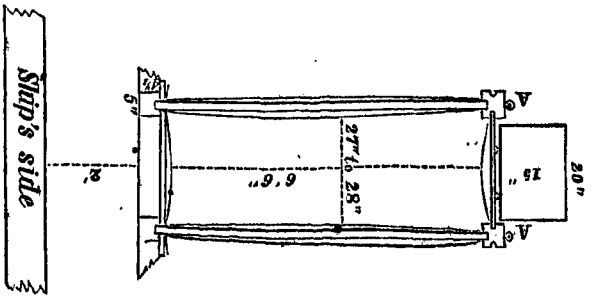


Fig. 3.

It was intended to adopt the arrangement shown in figure 5, as diminishing vibration.

At sea, the sling is used only in cases of necessity; that is, when the animal shows signs of weakness in bad weather; in this case, about 1″ play is given to the sling, as it is only intended to prevent the animal from falling.

The same sling, with the addition of a breast-strap and breeching, is used for hoisting the animals in and out.

Whenever it is possible, a staging is erected alongside, that the horses may be walked on and off the ship.

On the spar-deck the stalls are under sheds, every eight stalls forming a separate set, so that they can readily be moved about when the decks are to be cleaned. Water-proof curtains are provided for the front and rear; a passage-way of 2′, as a minimum, is left between the sheds and the bulwarks.

The other arrangements are as on the other decks.

To place the animals in the stalls, all the side-boards are taken out, except that at the end of the row; a horse is then walked along the row to the last stall, and the other side-board put up; then a second horse is put in the next stall, in the same manner, &c. The horses should always be placed in the stalls in the order in which they are accustomed to stand in the stable or at the picket-rope.

If it is desired, during the voyage, to remove any horse from his stall, it is only necessary to remove the breast-board and walk him out.

All wooden parts are washed with some disinfecting compound, or simply whitewashed. Chloride of zinc is freely used.

The decks are washed every day, and the stalls cleaned after every feed, —especially at 7 P.M.

From the spar and main decks the stale passes off through the scuppers; from the orlop-deck it passes to the hold, and is pumped off by the engine.

Not the slightest disagreeable odor could be detected on the Himalaya.

The feed-troughs and the nostrils of the horses are washed every morning and evening with vinegar.

For every 8 stalls a scraper, brush, and shovel are allowed.

The horse-guard always remain at their posts, and send for the farrier or non-commissioned officers in case of necessity.

Great attention is paid to ventilation. Although the orlop-deck is so hot that the animals perspire a great deal, the animals carried there came off the voyage in better condition than the others.

The cavalry soldiers attend to the horses. So long as cleanliness is preserved, the commander of the ship does not interfere as to the hours of feeding, &c.

A supply of forage is always carried on board the ship. The veterinaries take their own medicines with them.

As a proof of the perfection of the system pursued on the Himalaya, it should be mentioned that Captain Priest had transported 3,000 animals while in command of her,—some of these direct from England to Balaklava. Out of this number but three (3) died.

The usual hours for feeding are 6 A.M., 11 A.M., 5½ P.M.; if any horse refuses his food, the fact is reported at once. The horses drink condensed steam.

The regulation ration at sea is: 10 pounds of hay, 6 pounds of oats, ½ peck of bran, and 6 gallons of water,—as a maximum.

It was thought that this was generally too great, and that two-thirds of this allowance, except the water, would be ample, as it is found that there is great danger from over-feeding at sea.

No grain is given the day they come on board,—only a mash of bran, which latter is regarded as the best habitual food at sea.

In concluding this subject of the transportation of horses at sea, I would call attention to the little work of Lieut.-Col. Shirley on the subject; it contains many excellent hints; but it must be remembered that the system just explained is founded on a larger experience than that of Col. Shirley.

In regard to the transportation of men, bunks and hammocks are generally used. Standing bunks are found to be very objectionable, on account of the difficulty of keeping them clean; hammocks are regarded as preferable for men in good health, while many officers consider it best to provide neither hammocks nor bunks, but to allow the men to lie down on the fore-decks with their blankets and overcoats.

The following works may be consulted with advantage, as containing useful ideas:

Cavalry Outpost Duty, by Lieut.-Col. Von Arentschildt.

The Cavalry Sword Exercise.

On the Training of Cavalry Remount Horses, by Capt. Nolan.

Cavalry, its History and Tactics, by Capt. Nolan.

SARDINIAN CAVALRY.

This consists of:

4 regiments of cavalry of the line, (heavy cavalry.)

5 regiments of light cavalry.

Each regiment consists of 4 active and 1 depot squadrons, and has a strength of about 35 officers and 600 men.

The staff of a regiment consists of: 1 colonel or lieutenant-colonel, 1 major, 2 adjutants, 1 paymaster, 1 captain and 1 lieutenant of clothing and supplies, 1 chaplain, 2 surgeons, 2 veterinaries, 18 non-commissioned officers, &c.

Each active squadron is composed of:

1 captain, 2 1st lieutenants, 2 sub-lieutenants, 1 orderly sergeant, sergeants, 11 corporals; 8 lance corporals, (or 1st-class privates,) 2 trumpeters, 2 buglers, 1 farrier, 1 saddler, 110 privates.

Each depot squadron consists of:

1 captain, 1 1st lieutenant, 1 sub-lieutenant, 1 orderly sergeant, 2 sergeants, 5 corporals, and 10 privates.

There are, in addition to regiments mentioned above, 6 squadrons of local cavalry in the island of Sardinia; the composition of these is nearly the same as that given above.

The four regiments of heavy cavalry are armed with the sabre, lance, and pistols; they wear helmets.

Of the five light regiments, two are lancers, armed with the sabre, lance, and "*pistolon*;" the other three are armed with sabre, pistol, and rifle.

The sabre is 3′ long, broad, and nearly straight; it has a steel scabbard and guard, the latter solid towards the blade; the gripe is unusually long.

The pistol is an ordinary percussion horse-pistol, carried in the left holster, and secured to the saddle by a leather strap attached to the guard.

The rifle has a barrel 30″ long, and is carried slung over the left shoulder.

The "pistolon" is a rifled carbine with a 12″ barrel; it carries a spherical ball, and gives a satisfactory range.

It may be used either as a pistol or carbine, although the stock does not detach; it is habitually carried in the right holster, but there is also a common carbine-sling for it; there is also a hook on one side of the stock, so that the men can hook it to the waist-belt when they dismount.

The lance is about 9½′ long, with a bayonet-point, and a button at the end of the shaft; a strap of steel, 5′ long, is screwed to the shaft; pennon dark blue.

The sabre-belt is much like our own.

The cartridge-box contains 30 rounds, and is suspended by a shoulder-belt; the pistol-rammer is attached to this belt.

The saddle is a bare wooden tree, very similar to the Hungarian; a small pad and a schabraque are laid on top. A common blanket, folded in 12 thicknesses, is placed under the saddle. Girth and surcingle of leather; stirrups of steel, and light.

The snaffle is attached to the halter-headstall by a chain and T; the curb is also of steel, and has a separate headstall, to which it is buckled.

The valise is of cloth, and 24″ long; a shelter-tent, like that of the French, is carried under the valise-flap.

Spurs of steel, and fastened permanently to the boots.

All the cavalry wear a dark-blue frock-coat, with short skirts; pants and overcoat very nearly of the same color as our own. The cap resembles our dragoon shako very closely; it has a yellow water-proof cover, the hind flap of which ties *over* the shako, and a red spherical pompon; there is also a cover for the pompon.

The seat of the pants is re-enforced with cloth, the bottom of the legs with leather; the straps button on one side, and buckle on the other; the pants have a black stripe.

In the Crimea there were 4 squadrons of light cavalry, two of which were lancers; the squadrons were about 130 strong. The ration of forage was 11 pounds of hay, and 8 quarts of barley.

The horses were partly attached to the picket-rope by the right fore-foot; some of them by a rope or strap attached to a collar.

Their horses seemed to be excellent animals, but rather low in flesh; they were mostly Italian animals.

The appearance of the Sardinian cavalry, as indeed was that of their whole army in the Crimea, was excellent; indeed, the general appearance of their army was superior to that of either of their allies.

It will be observed that there are no cuirassiers in the Sardinian army; and that their heavy cavalry differs from the light only in the size of the men and horses.

UNITED STATES CAVALRY.

THE nature of cavalry service in the United States being quite different from that performed by any in Europe, we ought not to follow blindly any one system, but should endeavor to select the good features, and engraft them upon a system of our own.

The proper organization of our cavalry must depend upon the consideration of three things: 1st, the nature of its service against the Indians; 2d, its employment against a civilized enemy invading our territory; 3d, its service in an offensive war, carried on against our neighbors.

The Indians, against whom our cavalry are brought to bear, are generally irregular light horsemen, sometimes living and acting altogether on the plains, in other localities falling back into the broken country when pursued: the difficulty, always, is to catch them; to do so, we must be as light and quick as they are, and then superiority of weapons and discipline must uniformly give us the advantage.

Any army invading our territory must necessarily be deficient in cavalry; in addition, the nature of the parts of our frontiers most liable to attack is not suited to the action of large bodies of cavalry, while in partial operations, light cavalry, well handled, ought always to be superior to heavy cavalry.

Canada, Central Mexico, and the West Indies, are also unsuited to the operations of masses of cavalry, and in none of them are we likely to encounter heavy cavalry, or large numbers of light cavalry; infantry and artillery must generally do most of the work, while light cavalry will afford invaluable assistance, and in Northern Mexico play an important part.

It would, therefore, seem that heavy cavalry would be worse than useless for our purposes, and that we need only light cavalry, in the true and strictest sense of the term.

I would propose that the regiments serving in localities where they are liable to be called upon to dismount, to follow the Indians on foot, be armed with the sabre, of a light pattern, the revolver, and the pistol-carbine, or else a rifled weapon, longer and more effective than the present

carbine; that those serving on the plains be armed only with the sabre and revolver, giving to about 10 men in each platoon the pistol-carbine, or a long rifled carbine, in addition.

The accoutrements should be so arranged that when the men dismount to fight on foot, they can hang the sabre to the saddle; the pistol should always be carried on the person; the carbine slung over the shoulder.

The horses should be purchased by cavalry officers, and be selected for activity, hardiness, and endurance.

The men ought to be light, active, and intelligent.

The tactical unit should be small, that it may be handled with the greatest possible ease and celerity, and that it may never be broken. The regiments, also, should be small, for the same reasons.

The FORMATION OUGHT TO BE IN ONE RANK, as covering the greatest extent of ground, admitting the most rapid movements, and bringing every man to bear to the greatest advantage; suitable reserves should always be held in hand.

I would propose, as the unit, for interior service, and tactical purposes, the company, composed as follows:

1 captain.
3 lieutenants.
1 orderly sergeant.
1 quartermaster sergeant.
1 veterinary sergeant.
4 duty sergeants.
8 corporals.
66 privates.
2 trumpeters.
1 farrier.
1 saddler.

Total, 4 officers, 85 non-commissioned officers and men.

Of this number, 6 privates and the saddler to be dismounted, leaving the effective force of combatants, 4 officers, 78 men, and 78 government horses.

It would be advantageous to create the grade of first-class privates, say 20 in each company, as a means of rewarding good and faithful old soldiers who are not fitted to become non-commissioned officers; they should receive somewhat more pay than the second-class privates. The company to be divided into two platoons, four sections, and sets of fours. The lieutenants and non-commissioned officers to be attached to the same platoon and section, for the purposes of drill and interior service.

The posts of the officers, &c., to be as follows:

The captain in the rank, between the platoons; when necessary, he can move to the front, his place being left vacant; the 1st lieutenant, com-

manding the 1st platoon, on the right of the company; the 2d lieutenant, commanding the 2d platoon, on the left of the company; the 3d lieutenant, as file-closer, 4 paces in rear of the centre; this officer not to be replaced if absent; the orderly sergeant, as file-closer, two paces behind the right file; the quartermaster sergeant, two paces in rear of the left file; the veterinary sergeant, half-way between the orderly sergeant and the 1st corporal; the 1st duty sergeant, on the right of the 1st platoon; the 2d, on the left of the 2d platoon; the 3d, on the left of the 1st platoon; the 4th, on the right of the 2d platoon; the 1st corporal, as file-closer, 2 paces in rear of the centre of the 1st section; the 2d, behind the 4th section; the 3d, behind the 2d section; the 4th, behind the 3d section; the 5th, to be the left file of the 1st section; the 6th, to be the right file of the 4th section; the 7th, to be the right file of the 2d section; the 8th, to be the left file of the 3d section; the buglers, 2 paces behind the 2d files from the inner flanks of the platoons; the farrier, half-way between the quartermaster sergeant and the 2d corporal; the saddler and the dismounted men to remain with the train.

It will be observed that the strength of the company is the same as now authorized; it requires another lieutenant, in place of the brevet 2d lieutenant, and the addition of 2 sergeants, 1 veterinary, 4 corporals, and 1 saddler, while the number of privates is diminished by 8.

Regiments composed of 6 companies would be preferable to the present organization; by the addition of 2 companies to the 40 now in service, 7 effective regiments would be formed.

If this cannot be done, it would be well to decrease the number of companies in a regiment to 8, and form a 5th regiment of the 8 superfluous companies.

If neither of these plans can be adopted, it is believed that the modification proposed in the organization of the company will of itself produce very beneficial results.

To the staff of each regiment there should be added a chief veterinary, with the rank of sergeant major, or even as a commissioned officer, and a chief saddler; to the standard-company there should be allowed an additional sergeant as standard-bearer, and a corporal as assistant, or these two non-commissioned officers might be attached to the staff.

If a band is considered necessary, the men ought to be considered as belonging to the staff, in addition to the usual strength of the regiment, and not to be subtracted from the strength of the companies; it should be supported by the government, and not by the officers and regimental fund.

It would be advisable that the hospital attendants be placed on the same footing; and that a proper number of teamsters be authorized for the staff and each company, to be enlisted or hired as such, and not detailed from

the companies; those for the companies should be under the sole control of the captains.

The junior field officers should have a direct, specific, and well-defined authority over a certain number of companies, the colonel taking the general direction; in a new organization it would be well to have 1 field officer for every 2 companies.

It ought to be laid down that detachments shall always be composed of men of the same company, and never of details from different companies; in the same company platoons or sections with their own officers and non-commissioned officers should, as far as practicable, be detached as units.

If legislation is called for, and obtained in effecting a reorganization of our cavalry, I think that it would be advisable to call the unit a *squadron*, instead of company, in order to distinguish it from the infantry unit in reports, returns, &c., without the necessity of circumlocution. It is also of importance to obtain authority to enlist supernumerary recruits, who might be kept at the cavalry school, of the European system of depot squadrons might be adopted; in time of war this system will be found to be absolutely necessary to maintain the cavalry regiments in a state of efficiency, and the requisite laws should be obtained in time of peace, that there may be no delay in taking the proper measures at the right time.

A proper organization would authorize a moderate number of supernumerary officers of all grades, for detail upon detached duty, so that the full number required by the tactics might always be present with the regiments and companies.

The efficiency of the arm would be increased were there a general of cavalry, whose duty it would be to inspect the troops of the arm, watch over their interests, and secure uniformity in the service. This officer ought to have a number of aides-de-camp, all cavalry officers, who could make, under his orders, more frequent inspections than any one man could accomplish.

TACTICS.

The individual instruction of man and horse should be regarded as the most important point of the whole system, and should be as simple as possible; the man should be taught to manage his horse with ease and address over all kinds of ground and at all gaits, to swim rivers, to go through certain gymnastic exercises,—such as vaulting,—to fence, to fire very frequently at a mark, and to handle his weapon with accuracy and effect at all gaits and in all situations.

Some of the preliminary instruction prescribed in the Russian and Austrian tactics might be introduced advantageously.

Every thing in reference to heavy cavalry, lancers, hussars, &c., should be omitted.

I would adopt the Russian sabre exercise as the basis of our own; in-

sist upon the sabre being kept sharp in the field, provide the men with means of doing so, and lay it down as a rule that the strength of cavalry is in the "spurs and sabre."

The instruction on foot should be carried no further than its true object requires; that is, to bring the men under discipline, improve their carriage, and enable them to comprehend the movements they are to execute mounted.

The formation for review, parade, inspection, &c., to be: the companies deployed in one line, with intervals of 12 paces, or else in a line of columns of companies by platoons, according to the ground.

The Russian tactics will suggest excellent arrangements for the orders of battle of commands composed of regiments having ten, or fewer, companies, also for the movements of brigades, divisions, &c.

It should be laid down as a fixed rule that no cavalry force should ever charge without leaving a reserve behind it, and that against civilized antagonists the compact charge in line should be used, in preference to that as foragers.

Columns to be formed with wheeling distance, and closed in mass; when closed in mass, the file-closers close up to 1 pace from the rank, and the distance between the subdivisions to be just enough to permit each company to wheel by fours.

Marching columns to be by file, twos, fours, or platoons; by fours and platoons in preference when the ground permits.

Columns of manœuvre to be by fours, platoons, companies, or in double column; the latter always a regimental column, and to be formed on the two central companies, or platoons, without closing the interval between them.

Deployments to be made habitually at a gallop, and the individual oblique to be used as much as possible.

The instruction in two lines to be provided for.

The Russian tactics give a good basis for the system of skirmishers, and charging as foragers.

For the use of the mounted rifles, and cavalry acting as such, there should be a thorough system for dismounting rapidly, and fighting on foot.

CAVALRY SCHOOL AND DEPOT.

1st. To afford the young officers of mounted regiments, before joining their regiments, thorough instruction in the tactics, regulations for interior service, the general principles of field service, all necessary knowledge in regard to the horse, the use of weapons, &c.

2d. To perfect the instruction of lieutenants now serving with the regiments in the same branches.

3d. The instruction of non-commissioned officers sent from the regi-

ments: it would be advisable to detail picked corporals, and insure, to a certain number of the best, promotion as sergeants immediately upon leaving the school.

4th. To instruct the recruits, that they may be well drilled and thoroughly instructed before joining their regiments.

5th. To break the remount horse, so that each recruit may take a well-broken horse with him when he joins his regiment, and that other remount horses may also be broken before being sent to the regiments.

6th. A veterinary school should be attached to the establishment, for the instruction of officers and veterinaries.

7th. A school for farriers.

8th. A school for trumpeters.

The systems of instruction and the organization of the French veterinary schools, and of the cavalry school at Saumur, afford, perhaps, the most accessible models for the basis of our own. The text-books there in use can readily be adapted to our own purposes, until experience enables us to have others of our own.

As a first step, we should have detailed special regulations for the use of mounted troops in garrison and the field.

To establish the veterinary school, I would propose the following, as probably the best and easiest plan:

Select an army surgeon who has served in the field with cavalry, is a good judge of horses, has turned his attention somewhat to the subject, and would be willing to assume the proposed duty; place him at the head of the veterinary school, and let him prepare the necessary course of instruction and text-books. In the first instance, at least, his assistants should also be of the medical staff.

It is very certain that no officer of the line possesses the technical and anatomical knowledge necessary to initiate an establishment of this kind.

Even if the school proposed cannot be established, there ought to be a work prepared by some of the medical corps on the veterinary science, for the use of cavalry officers. A small work on farriery would also be very serviceable.

The pupils for the veterinary school might be selected from among the best recruits; indeed, it is not improbable that the advantages of such an institution would induce excellent men to enlist, for the purpose of availing themselves of its benefits. Should such be found to be the result, it would then be well to require them to enlist for longer than the usual time, as a compensation for the time spent at the school. The pupils at the farrier school should be recruits who are blacksmiths by trade.

All the advantages of extra-duty pay ought to be secured both to the veterinaries and farriers.

PURCHASE OF HORSES.

It would be advantageous to detail officers of cavalry on this duty, just as they now are for the recruiting service. In cases when cavalry officers are recruiting in districts where horses abound, they could attend to both duties at the same time.

It might at present be proper to select the purchasing officers for their knowledge of horses; but it is believed that the effect of the education received at the proposed cavalry school would be such that, in a few years, all officers would be capable of purchasing. Animals bought in this way, as occasion offered, and not in large numbers at a time, would be obtained for a more moderate price, and more careful selections could be made.

They should all be sent to the cavalry school, when the commandant, and a certain number of the senior officers on duty there, would constitute a proper commission to inspect the animals and direct the service.

There should be regulations determining approximately the height, age, conformation, and qualities that the horses should possess; also a maximum, or rather an average, price, varying from time to time, according to the state of the market.

UNIFORM.

I would recommend that the epaulette be entirely dispensed with for regimental officers; it is useless, expensive, and inconvenient: the strap on the undress uniform is a sufficient distinction of rank.

For the men, I would replace the scales by a strap of cloth, of the same shape as that on the old fatigue uniform, but sewed fast to the jacket.

They should also have a police-cap, without visor, and of such a nature that it can be folded up, and carried in the pouch, or wherever may be most convenient; the Scotch bonnet, Turkish fez, a Greek cap of knit or woven wool, a flexible cap of the shape of the old forage-cap,—any of these would answer.

For service on the prairies, the men should have a loose flannel coat, leaving their uniform coat in garrison; the ordinary dark-blue sailor's shirt, cut open in front, and provided with a lining and pockets, is as good as any thing that can be devised.

The French fashion of giving the men a merino scarf in the field, instead of a stock, is worthy of consideration.

It would be well, on many accounts, to re-enforce the pants with thin leather.

The amount of clothing to be carried by each man should be limited; I do not see that they need more than 2 pairs of drawers, 1 shirt, 2 pairs of socks, a towel, soap, and hair-comb, in addition to what they wear;

during very long expeditions, extra clothing should be carried in the train,—never on the horses.

The method of cold-shoeing, as described in the report upon the French cavalry, should be enforced, and the shoes carried by each man should have been previously fitted to the horse.

In different parts of this work will be found full information as to the cooking-utensils carried in the field by the European cavalry; it is very important that competent cavalry officers should fully consider this subject, and adopt a set suitable to the requirements of our own service; the proper principle would be to have small messes in the field, each mess consisting of the smallest number that are likely to be detached as a unit, so that they may always have their cooking-utensils with them; the utensils should be such that the men can habitually carry them on their own horses with convenience.

I would recommend that the shelter-tent be adopted as a part of our system.

The best model for a cavalry stable should be adopted, determining minutely the interior arrangements and the general plan as far as possible; and all stables built hereafter should be required to be in accordance with this plan; the drawings and descriptions furnished by the different members of the commission will afford the means of doing this understandingly.

The English system for the transportation of horses by sea, as followed in the Himalaya, is beyond doubt the most perfect that has been devised; sketches and a full description of this will be forwarded in a few days, and it is recommended that it be inserted in our regulations, and adopted as our own system.

There are other suggestions as to the regulations and the service which I have already made in official and unofficial communications; I will here allude again only to the propriety of inscribing upon the colors of each regiment the names of the actions in which it has borne an honorable part, and of placing these same names on the army register, at the head of the list of the officers of the regiment; for few things are more important than those which tend to inspire and preserve a feeling of pride in the regiment, on the part of all its officers and men.

APPENDIX.

REGULATIONS FOR THE FIELD SERVICE OF CAVALRY IN TIME OF WAR.

PART I.

MOVEMENTS OF TROOPS IN THE VICINITY OF THE ENEMY.

INTRODUCTION.

§ 1. THE principal differences between marches near the enemy, and those during peace, are:

1st. That in the former case the troops are not so much divided, but move in larger bodies than in peace.

2d. That proper precautions are observed to guard against sudden attacks.

Remark.—In time of war, troops so far from the enemy as to be in no danger of attack observe only a part of the military precautions indicated below, increasing them as they approach the enemy.

CHAPTER I.

ARRANGEMENTS FOR THE MARCH.

ARTICLE 1.

General arrangements and remarks as to marches.

§ 2. Military marches may in general be: 1. Offensive; 2. In retreat; 3. To the flank.

§ 3. In each of these cases the troops may move in one or several columns.

§ 4. They move in several columns when in strong force, and having convenient roads, neither far apart, nor separated by impassable obstacles. But if it is necessary that a great number of troops follow the same road,

the column should be divided into echelons, following each other at intervals, in order to avoid delay from crowding.

§ 5. It is impossible to determine with exactness the intervals between different columns, or between the echelons of the same column; these must depend upon the nature and relative positions of the roads, as well as upon the strength and degree of independence of each column. But it may be laid down as a general rule that these distances should be such that the commander can concentrate and form the whole, or at least the greater part, of his command before being seriously attacked.

§ 6. For the details of the distribution of the troops in the several columns and echelons, the rules laid down in the tactics for the formation of general columns must be taken as guides; observing that each fraction of the entire force must be so arranged that it can always form promptly to meet the enemy.

§ 7. On the march, cavalry may move by twos or by fours, but in preference by platoons when the road permits.

Artillery marches by piece or by section.

In a retreat, those parts of the rear guard nearest the enemy will always march by the rear rank.

§ 8. On the march, the distances permitted are: between companies, about 25 paces; between regiments, about 50 paces; between brigades, about 100 paces.

Article 2.

Precautions against sudden attack to be observed on the march.

§ 9. To secure troops, on the march, against sudden attacks, there are sent out from the main body: *an advanced guard; a rear guard;* and *flank detachments,* or *guards.*

§ 10. During offensive marches, the advanced guard consists of one-fourth, or one-fifth, of the whole force; it may be increased or diminished according to circumstances and the judgment of the commander. Its purpose is, to march at some distance in advance of the main body, in order:

1. To observe the enemy betimes, and give early information of his appearance, strength, and direction of march.

2. Having discovered the enemy, to follow, never losing sight of him, and endeavor to obtain all possible information concerning him.

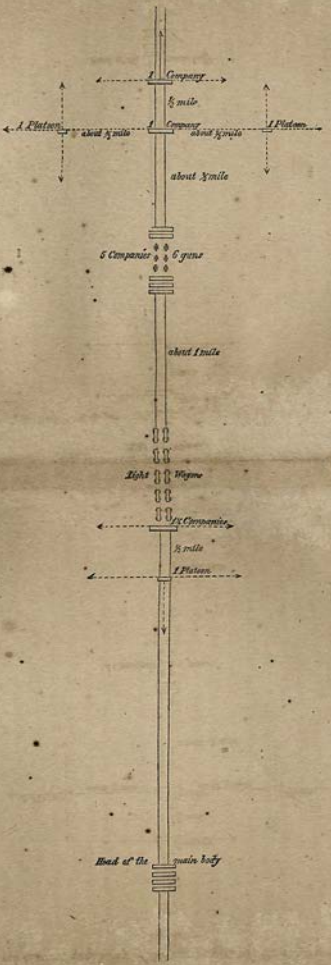
3. Should the enemy approach and attack, to delay him long enough to enable the main body to form in order of battle.

4. To examine the country in advance, and remove all obstacles from the road.

5. During the arrangements of the main body for halting or encamping, to cover it on the side of the enemy.

Advanced Guard, consisting of 10 companies of Cavalry and 6 guns.

Fig. 1.



The arrows indicate the directions in which patrols are sent.

§ 11. On the march, the advanced guard should be so far in front that, without incurring too great risk, it may delay the enemy long enough to enable the main body to prepare to receive him. Therefore, in proportion as the advanced guard is stronger and more independent, and as the time required for the formation of the main body is greater, the farther should the advanced guard be pushed forward, up to one-half a day's march, or farther. In small detachments, not requiring much time to assemble and form, the advanced guard does not move farther than from one and a half to three miles in front.

Remark.—When, under peculiar circumstances, the advanced guard is pushed forward a considerable distance, and therefore exposed to a separate defeat, or when the nature of the ground is such as to render its retreat difficult, there is sent out from the main body an "intermediate detachment," which holds itself in echelon between the two, to support the advanced guard if suddenly attacked. This detachment is under the orders of the commander of the advanced guard, who, upon meeting the enemy, either orders it up to assist him, or falls back upon it, according to circumstances.

§ 12. For the protection of its own march, an advanced guard should have an advanced guard of its own, consisting of one or more companies, or a platoon, according to the strength of the party; and on its flanks, flank guards, each of a platoon or section.

Remark.—The standard is always left with the main body of the regiment.

§ 13. The advanced and flank detachments keep themselves at from 500 to 1,000 paces from the head and flanks of the main advanced guard, according to their strength and the nature of the country.

§ 14. These detachments send out patrols in front and on the flanks, to examine the country and obtain early intelligence of the enemy. These patrols are usually at from 500 to 1,000 paces from their detachments, and ought to regulate their intervals so as never to lose sight of each other, and to form a continuous chain around the head and flanks of the main advanced guard.

§ 15. The general arrangement, without regard to the ground, of an advanced guard, composed of 10 companies of cavalry and 6 pieces of horse artillery, is shown in Fig. 1.

§ 16. An *advanced guard during a march in retreat* consists of a small number of troops, usually determined as in time of peace.

Its purpose is:

1. To open the way for the main body, and remove all obstacles from the road.

2. To serve as the escort of the train, which should move, at least, as

far in advance of the main body as it does in rear of it during an offensive march.

§ 17. In this case, the advanced guard sends out front and flank detachments and patrols, which are arranged precisely as in offensive marches. Here the principal object to be kept in view is that all the detachments may be promptly united at any moment.

§ 18. During an *offensive march* the *rear guard* is formed according to the same principles as an advanced guard during a retreat. Its duty is as follows:

1. To watch over the preservation of order in the rear of the column.
2. To pick up stragglers.
3. To protect the rear of the column and the train against sudden attacks by parties of the enemy.

§ 19. In a *retreat*, it is the duty of the *rear guard* to cover the movements of the main body, as well as to repulse and delay the enemy in every possible manner. In this case, its duty becomes as difficult as that of the advanced guard in an offensive march, and sometimes more so, especially when the retreat is effected in sight of the enemy. The rear guard must, at every favorable point, use all means to check the enemy, and thus render it possible for the main body to retreat without precipitation. To effect this, it should always be much more independent than the advanced guard in offensive marches; for the latter can always retreat upon the main body, or be readily supported by it.

§ 20. With regard to the safety of the main body, the rear guard in a retreat observes the rules laid down in numbers 1, 2, and 5 of § 10.

§ 21. The strength of the rear guard depends upon several circumstances:

1. Upon our own and the enemy's designs.
2. Upon the proximity of the enemy.
3. Upon the nature of his operations.
4. Upon the distance from the main body, and the order of march of the latter.

If the enemy pursues vigorously, or if the main body ought to fall back a great distance behind the rear guard, then the latter should be strong enough to operate independently, and defend itself obstinately in all favorable positions. Such a rear guard should be one-fifth, or even one-third, of the whole force.

§ 22. The rear guard should cover its movements, both in the offensive and retreat, in the manner laid down for the advanced guard in §§ 12, 13, and 14.

§ 23. If the main body marches in several columns, all the rear guards should communicate with each other by means of patrols. They ought also to move in line,—that is to say, on the same general line perpendicular to the general direction of the march.

§ 24. To the advanced guard in all cases, and to the rear guard in retreat, mounted engineer troops are attached; in default of these, mounted working-parties with tools: in the first case, to remove obstacles in the road; in the second case, to retard the pursuit of the enemy, by destroying bridges, breaking up the road, &c.

§ 25. The distance of the rear guard from the main body depends upon its strength; generally, in a retreat, the rear guard is held at such a distance from the main body that the latter, even when the enemy attacks in force, may without precipitation or impediment select its own time and place for halting or encamping, without making a forced march. But if the rear guard is weak, and the enemy pursues vigorously, the main body should remain near by to support it. If the main body is obliged to pass defiles, or if its movements are in any way retarded, it must be at such a distance from the rear guard as to give it time to move off a sufficient distance, in spite of any unexpected delay.

§ 26. If the main advanced and rear guards move at the distance of some miles from the main body, each column of the latter detaches, in addition, small advanced and rear parties, (one or two companies, or a platoon,) which march at the distance of some few hundred paces from each column, and perform the duties of advanced and rear guards in time of peace.

§ 27. In cases where the nature of the ground, on the flanks of the roads, is such as to render the march of the columns insecure, small detachments are sent out as flankers; and from these patrols on the extreme flanks, as explained in §§ 12, 13, and 14.

Article 3.

Arrangements during a flank march.

§ 28. In a march to the flank, if it is in the power of the enemy to attack the flank of the columns in march, all the parts should be so arranged that they may promptly, and without a long movement, change from the order of march to that of battle, either by wheeling into line, or by changing the direction of the columns, and in such a manner as to be able to resist his attack. Therefore, in such cases, certain troops are designated who are to form the line of combatants in the order of battle, others to form the reserve, and others to guard the trains, on the road farthest from the enemy.

§ 29. During flank marches, flank detachments are sent out towards the enemy; they march parallel to the main column, watch the enemy, and, if necessary, oppose him long enough to enable the main body to form in order of battle.

§ 30. The duties of these flank detachments correspond to those of

advanced guards in offensive marches, and rear guards in retreat; because the flank detachments protect the main body against a sudden attack, and enable them either to pass from one line of operations to another, or to gain a position on the flank of the enemy, or, finally, to turn him.

It should be observed, however, that flank marches should always be undertaken and executed with many precautions; for, when making them, it is easy to lose our own communications and line of retreat, if we have not time to gain the new line of operations. Therefore, that there may be no impediment during the intended flank march, every thing possible must be done to conceal it from the enemy, by taking advantage of the ground, and by the movements of the flank guard, which should be strong enough to offer an obstinate resistance, and keep the enemy away from the main body until the completion of the movement.

§ 31. The strength of the flank guard must be in proportion to the duties it has to perform; its strength must be determined upon the same principles as that of advanced and rear guards.

§ 32. The arrangements for the march, and the manner of operation of a flank guard, depend entirely upon the position of the enemy, the nature of the country, and the direction of the roads. To secure the march, the flank guard pushes out detachments and patrols on the exposed side, to cover the whole flank of the columns in march. The flank guard itself either marches opposite the main body, or remains in position, to occupy points where roads coming in from the side of the enemy would enable him to disturb the march of our own troops. In the last case, when the columns of the main body have passed beyond the point occupied by the flank guard, the latter either occupies another point, covering the march, by gradually sending troops there, or else places itself as a rear guard behind the marching column, while, in the mean time, any other points to be occupied have been held by other flank guards detached from the main body.

The first method is pursued when the ground permits the movement of the flank guard to be made without danger, as, for instance, along the banks of a stream over which there are few crossings; the latter in all cases where the march of the fractions of the flank guard would be exposed to danger from the attack of the enemy.

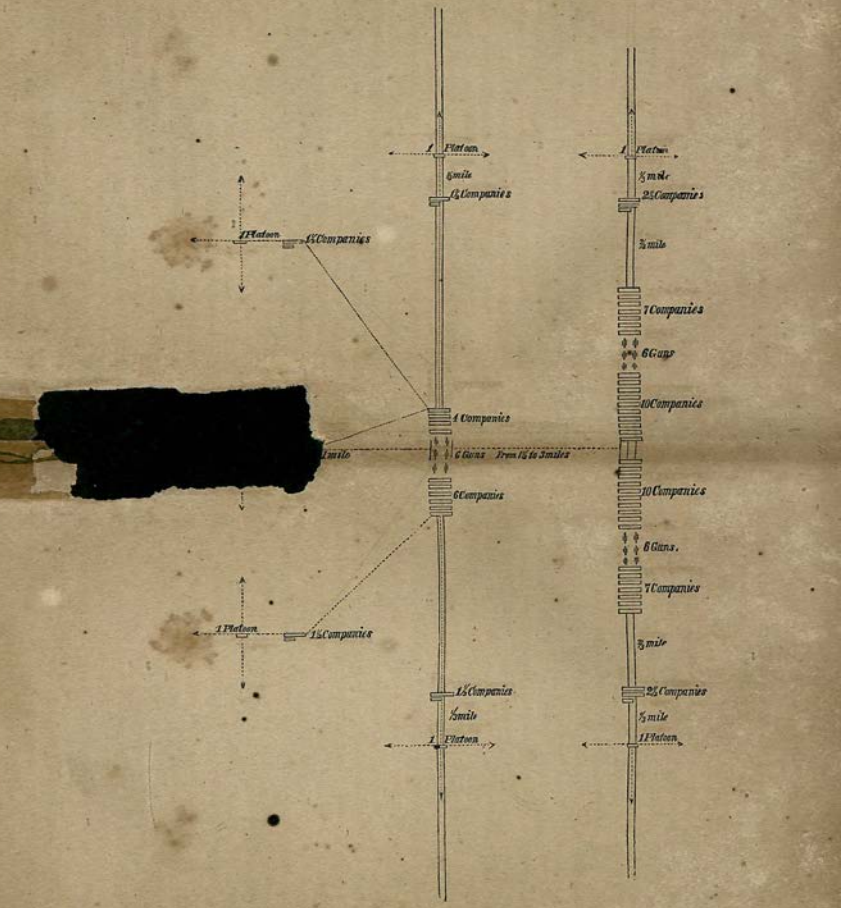
§ 33. The distance of the flank guard from the main body is regulated as in the case of an advanced guard in an offensive march.

§ 34. Fig. 2 gives an example, without reference to the ground, of the flank march of a division of cavalry, under the protection of a flank brigade and a battery of horse artillery.

§ 35. In addition to the main flank guard sent out in the direction of the enemy, each column of the main body detaches small advanced, flank, and rear guards.

Flank march of a Division of Cavalry, with its batteries, under the protection of a flank brigade and 6 guns.

Fig. 2.



The arrows indicate the direction in which patrols are sent out.

When necessary, a special guard is detailed for the trains, which, in such cases, usually move in one body.

Article 4.

Arrangement and movement of the trains.

§ 36. To avoid confusion and delay in the march of troops, from the great number of wagons with them, the trains are divided into *three classes.*

§ 37. Trains of *the first class, which are needed during the march,* consist of the ambulances, provided with the means of dressing wounds, and accompanied by the surgeon of the day, an assistant surgeon, and a party of hospital attendants.

In the artillery, the spare carriages accompany the train of the 1st class; in the mounted engineer troops, the ponton-wagons, if there is any necessity for them. In addition to these, during marches near the enemy, the ammunition-wagons accompany the trains of the 1st class, that the troops may never be in want of cartridges.

§ 38. Trains of the 1st class follow immediately after their regiments, batteries, or other integral parts.

§ 39. Trains of the 2d class, which are needed by the troops only when in camp, consist of: the wagons for ammunition, money, papers and records, tools, baggage, medicines, field-forges, artillery-wagons, staff baggage-wagons, pack-animals of the field and company officers, wagons of the office of the commander-in-chief, wagons carrying provisions and forage for immediate distribution, and, finally, the sutlers' wagons. Ammunition-wagons are separated from the others, and compose in each column a separate section, marching near the troops: *i.e.* in an offensive march, they move at the head of the trains of the 2d class, and in retreat, behind them. The other wagons of the 2d class move by kinds, and in the order named above.

§ 40. Trains of the 2d class march behind the troops, in the interval between the main body and the rear guard.

If there is no probability of meeting the enemy, or if the advanced guard is at a great distance (*e.g.* one-half a day's march) from the main body, then the wagons of the 2d class, belonging to the advanced guard, may march immediately after it; in like manner, if the general column moves by echelon, with intervals of half a day's march, then the wagons of the 2d class, belonging to each echelon, may march immediately behind it.

But when an affair with the enemy is anticipated, all the trains of the 2d class, except the ammunition-wagons, follow the main body, at a distance of not less than one-half a day's march; so that in the event of a retreat the wagons may not delay the movement. But in such cases the

ammunition-wagons follow immediately after the troops to whom they belong. In a general retreat, the trains of the 2d class should be placed at least one-half a day's march in front of the troops, *i.e.* at such a distance that in no event can they impede or delay the movements of the active troops.

§ 41. *Trains of the third class* consist of *those for which the troops have no immediate or pressing necessity.* They are composed of provision and forage wagons, wagons loaded with hospital stores and equipments, ambulances for the sick who are in the general hospital, &c., &c.

§ 42. Trains of the 3d class always march in a distinct train, separate from the troops, on the principal road, and under the protection of a special escort; the strength of which depends upon the extent of the train and the position of the enemy.

§ 43. The number of wagons allowed in the 2d and 3d classes depends upon circumstances, and special orders issued during the campaign. Commanders of separate detachments may be allowed to vary the number of wagons in each class according to circumstances.

§ 44. In the march of a large number of wagons, any obstacle to a section, or a single wagon, delays all that follow, and thus extends to the whole train. To avoid this difficulty, large trains are divided into sections of about 100 wagons each, which march about one-third of a mile apart.

§ 45. If, in addition to the ammunition-wagons, there are some loaded with loose powder, they are formed in separate sections and placed in the part of the train least exposed to the enemy. No foreign matter is to be placed on these wagons.

§ 46. The head of each section must occasionally halt for a moment, that the rear may keep closed up.

§ 47. Detailed arrangements for the formation and march of trains should be made.

Article 5.

The defence of trains.

§ 48. The duties of troops detailed as the escort of a train are: 1st. To enforce the preservation of order. 2d. To assist their rapid and uninterrupted march. 3d. To defend them if attacked.

§ 49. A portion of the escort, detailed to watch over the order of march, distributes itself as a chain along the whole length of the train. If the escort is small, a certain number of privates, under the charge of a non-commissioned officer, are placed in charge of a section, or certain number of wagons, and are responsible for their order of march.

§ 50. When the roads are very bad, some of the escort are dismounted, in order to be in readiness to assist any wagons that may mire, break down, or meet with any impediment.

§ 51. A working-party marches at the head of the escort to repair the road. The strength of this party will depend upon the number of wagons, the state of the road, &c.

§ 52. The strength and composition of the escort of a train must depend upon the probability of attack, the extent of the train, and, finally, on the nature of the country through which the train is to pass.

§ 53. If the escort is of infantry, a small party of cavalry must be added to look out for the enemy, patrol, &c.

§ 54. In all cases, the commander of the escort has absolute control over all persons on duty with or accompanying the train.

§ 55. The commander of the escort should possess accurate information concerning the country through which the train is to pass, that he may make the proper arrangements for its security.

§ 56. A part of the escort always marches as an advanced guard, and another portion as a rear guard. The main body is concentrated at points determined by the danger; if necessary, it detaches flank guards, which send out patrols. In an open country, and when there is no reason to expect the enemy at any particular point, the main body of the escort marches alongside of the centre of the train. Under other circumstances, they are concentrated at the head or in rear of the train, according to the direction in which the enemy is expected.

§ 57. The advanced guard is thrown forward a sufficient distance to remove all obstacles that would delay the train. By means of its patrols it examines the woods, villages, and defiles; keeps up its communication with the main body, and reports to the commander of the escort every thing observed.

§ 58. The advanced guard selects suitable positions for halting-places, camps, and for parking the train.

§ 59. The advanced guard occupies all defiles and positions which would enable the enemy to attack with advantage; it does not abandon them before the arrival of the main body of the escort, which last holds them until the train arrives. If necessary, the escort is relieved by a small flank detachment, or may itself remain in position until the whole train has passed by and is out of danger.

§ 60. If the enemy is expected from the rear, the suitable measures are taken; the rear guard destroying the bridges, dikes, &c., behind it, and throwing all possible obstacles in the path of the enemy. The rear guard should constantly keep up its communication with the main body by means of patrols.

§ 61. If the enemy threatens the flanks, and the ground is too much broken for the action of cavalry, the defence of the train becomes difficult for that arm. In such cases, small parties of cavalry are with the advanced and rear guards; but the main escort is composed of infantry,

who occupy positions favorable for protecting the train before its head arrives opposite to them, and do not abandon those positions until the rear of the train has passed by.

§ 62. Fig. 3 gives an example of the march of a train escorted by 10 companies of cavalry, 2 pieces of horse artillery, and 2 regiments of infantry.

ARTICLE 6.

Of short halts during the march, halts for the night, and halts for an entire day.

§ 63. The length of a march near the enemy depends upon circumstances, and cannot be determined absolutely.

Under ordinary circumstances, the length of march may be about 17 miles; but in case of necessity it may be extended to 30 miles. Small detachments move with much greater rapidity than entire corps, or armies. As a general rule, troops should not be exhausted by forced marches.

Small detachments of cavalry may make marches of 40, 50, or even 70 miles; but this refers only to exceptional cases, when the success of the enterprise in hand depends upon the suddenness of their appearance.

The ordinary rate of march should be about 3 miles per hour. When the roads are good, it is advisable to move at a moderate trot, walking for some distance before each halt, and before reaching camp; for it is proper to give the horses as much time as possible to feed and rest in camp.

Generals and other officers, furnished with an escort of cavalry, should regulate the rate of their march in accordance with what is laid down above, and are not permitted, except in cases of absolute necessity, to urge the escort to an immoderate speed for the sake of their own convenience.

§ 64. Short halts are made from time to time, as prescribed for marches in time of peace; that is, a halt for 10 or 15 minutes every hour, and in long marches, one or two long halts of about an hour each.

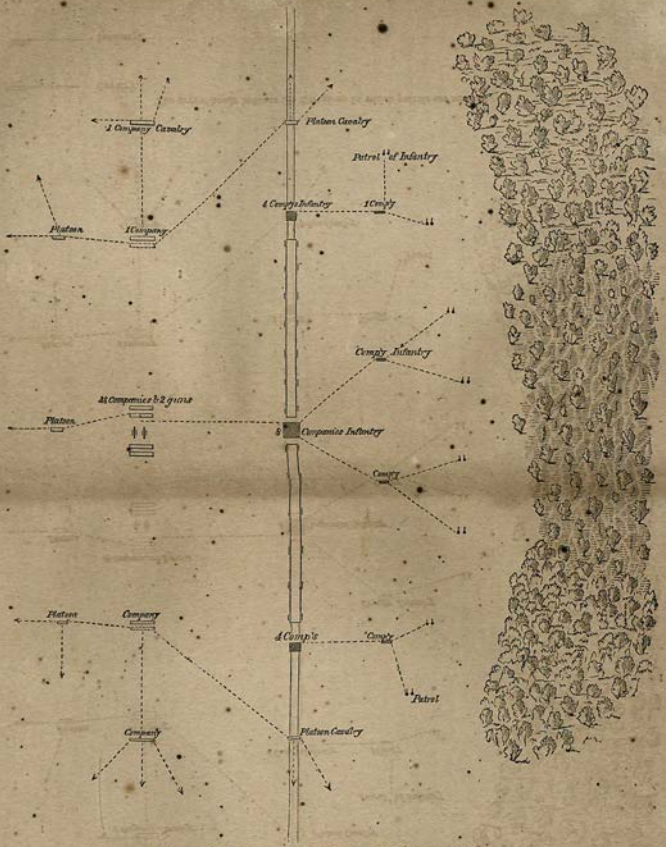
§ 65. When near the enemy, it is necessary to arrange the distances between the camps, or bivouacs, so that the columns of the main body can easily be assembled at the general point of rendezvous; then the reserves are to be placed near the roads by which the enemy is expected, in positions convenient to wood and water.

§ 66. The various parts of the army are so arranged that, if the enemy attacks, they can readily move out upon the roads, or quickly form in order of battle in a position chosen beforehand, either in front or in the rear of encampment or bivouac.

§ 67. The main body should always be secure from a sudden attack therefore, (notwithstanding there is an advanced guard in front and

Arrangement of a Convoy, escorted by 10 companies of Cavalry, 2 pieces of Horse Artillery, and 2 regiments of Infantry.

Fig. 3.



The arrow-heads indicate the directions in which patrols are sent out.

Cavalry.

Infantry.

Infantry patrol.

rear guard behind,) patrols are sent out from it, and a party is detailed, which does not unsaddle, and always remains ready for action; sometimes, to prevent being turned, separate posts are sent out on the flanks, and sometimes the troops are protected in their camp by advanced posts, arranged according to the rules laid down in Part II.

§ 68. The advanced and rear guards take measures not only for their own safety, but also for that of the main body, placing themselves for this purpose in positions suitable for action, and watching all the roads leading from the enemy.

§ 69. When it is perfectly certain that none of the enemy are in the vicinity, each column may pass the night by itself, on the road by which it marches.

§ 70. In flank marches of several days' duration, the camps for the night should be placed in such positions that the main body may be secure from attack, and in case of the appearance of the enemy in superior force be able to retreat, *i.e.* either to preserve the old road of march and communication, or in some manner to gain a new one. The arrangements for halts and camps for the night are the same as in offensive marches.

§ 71. In regard to the short halts of trains the following rules are prescribed: As in the case of cavalry, the head of the train occasionally makes short halts to enable the rear to close up, and if the train is divided into several sections, the head of each section does the same thing.

During these halts the wagons remain in the road, not turning to one side, or changing the arrangement of the wagons and escort from what it was during the march.

§ 72. Long halts, during which the animals are fed, are made only when the march is very long, or the roads very bad, and the animals fatigued. When the object is not to overtake the troops when at a halt, it is better to leave the train longer in camp, and then make the whole march without a halt; in this manner the animals are not kept so long in harness, and can therefore rest and feed better.

§ 73. During long halts, and camps for the night, the train is placed more compactly than usual; for which purpose a proper place is selected for placing all the wagons together, in order that, being less scattered, a better watch may be kept upon them, and better order be preserved. When danger is apprehended from the enemy, it is best to park the train in column, because this formation is changed more quickly than any other, and from it it is easier to take the road at the end of the halt, or when leaving camp.

Remark.—In this formation the average interval of 8 yards in width is allowed each wagon. The harness is either piled up behind the wagon, or hung on the wheels, and the animals are attached to the pole. The

distance between each row of wagons in the column may be fixed at about 20 paces.

Light wagons of the 2d class, although they move in separate trains, are not brought together in camp, but bivouac in rear of the corps to which they belong. If there are wagons loaded with powder, cartridges, or other combustibles, precautions must be taken to guard them from fire, and it is, therefore, best to park them in a separate place, apart from the rest of the train. The escort bivouacs at the head, or on the flanks, of the train, as may be most convenient; guards and sentinels are posted to preserve order; if the teamsters are not to be trusted, and desertions are apprehended, the whole train is surrounded by a chain of sentinels.

§ 74. When an attack is expected, the train should be corralled, or else parked in a square with the hind-wheels outside, and the animals in the centre.

In this case, the escort places itself in a suitable position, keeping in view the defence of the position occupied by the park, and takes all the military measures of precaution necessary to secure itself and the train against a sudden attack.

CHAPTER II.

DUTIES OF THE COMMANDERS OF THE VARIOUS PARTS OF THE TROOPS DURING MILITARY MARCHES.

ARTICLE 1.

Duties of the commander-in-chief.

§ 75. The commander-in-chief must cause the roads by which he intends to march, as well as the country on each side, to be examined by officers of the general staff, or by patrols; but if, from the proximity of the enemy, or other causes, this is impossible, it is necessary, at least, to obtain information concerning their nature and practicability by inquiries of the inhabitants, &c.

§ 76. He must take steps to procure a sufficient number of reliable guides, so that each separate detachment may have its own; this is especially important in thinly-inhabited districts, and in movements by cross-roads.

§ 77. In relation to seeking and employing guides, the following rules are laid down: 1. To be watchful, lest the guides, for their own purposes, prejudice us in any manner; 2. To select guides from among hunters, woodsmen, stage or wagon drivers, and herdsmen, as well as peddlers and travelling beggars, because the country is well known to these classes

of people; 3. To change the guides as seldom as possible, especially in localities where parties of the enemy may be met with; 4. To treat the guides kindly and mildly, and to reward them well; but to watch them closely and prevent them from passing over to the enemy, and to send them back by the road over which they came.

§ 78. He regulates the distribution of the troops, the order of march, and the precautionary measures; he arranges the disposition of the troops for the movement, by means of the maps of the country, and the information obtained concerning it and the enemy.

§ 79. The orders should be brief, clear, and positive. All minute details, which might, in unforeseen cases, trammel the subordinate commanders in the execution of their orders, should be avoided.

§ 80. The orders for the march should specify:

1. The number of columns; under whose command each column is to be; precisely where, and by what roads, the march is to be made.

2. The strength of each column, echelon, advanced, rear, and flank guard.

3. At what hour each column or party is to move.

4. Where and when the train is to assemble and move, and under the escort of what detachment. The road by which the train is to move should be carefully considered, in order that in the event of a sudden retreat the troops may find the most important roads clear.

5. The principal measures of precaution to be observed.

6. Where the commander-in-chief will be found during the march, so that the subordinate commanders may know whither to send their reports.

7. Finally, every thing rendered necessary by the circumstances is mentioned in the orders, and sometimes the general arrangements in case of meeting the enemy.

§ 81. In the distribution of the troops into several columns, for the march, the commander-in-chief will observe the following rules:—

1. The number of columns must depend upon the whole number of troops, and upon the number, nature, and degree of separation of the roads.

2. The movement of a large body of troops, as, for instance, an army corps, by one road, besides the difficulty of supplying them, renders the march difficult and slow; and, in addition, a long column requires much time to take up its order of battle. On the other hand, if the number of columns is very great, it may be difficult to keep up the proper connection; besides, when there are many roads near and parallel to each other, they are seldom of a nature favorable to the movements of large bodies of troops.

3. The intervals between the columns should always be such that they can give reciprocal support upon the appearance of the enemy, and not

be in danger of being turned or separated. This interval will depend upon the nature of the country: the more broken it is, the nearer should the columns be to each other, for in this case more time is required to concentrate the troops, the transmission of orders and information is slower, and it is more difficult to watch the enemy. In addition to these considerations, the intervals between the columns should be regulated by the proximity of the enemy; the nearer he is, the less should these intervals be.

4. The principal masses of the troops move upon the roads on which it is expected to meet the main body of the enemy, or by which the principal attack is to be made upon him.

5. Each kind of troops is moved towards the locality best suited for its operations.

6. If one flank is particularly threatened by the enemy, the columns on that side are reinforced, and the reserves drawn near them.

§ 82. To secure harmony of movement and the facility of mutual support, the commander-in-chief should—

1. Watch that the main columns are all equally advanced: therefore, he equalizes the rate of march on different roads, slackens the gait of certain columns, or increases the number and duration of the halts; regulating these things not only upon the length of march of each column, but upon all the circumstances that may influence the velocity of the movement, such as the nature of the road, the number of troops in the several columns, and the obstacles that may be encountered.

2. Take care that the columns do not cross each other.

3. Maintain a constant communication between the columns by means of patrols, which at the same time examine the intermediate country.

4. Take all precautions to enable the columns to unite at any moment: he therefore avoids separating the troops by insurmountable obstacles.

§ 83. That he may, under all circumstances, have it in his power to place the troops in position, the commander-in-chief should know not only where the troops ought to be at any given time, but also where they actually are. For this purpose, he requires every commander of an advanced guard, or chief of a separate column, to report not only the appearance of the enemy, as well as particular events and delays, but also his distance from known points on the road, and his arrival at halting-places and camps. These reports should be made the more frequently in proportion to the proximity of the enemy.

§ 84. To watch over the order of march, the commanders of the main and detached columns should occasionally halt and allow their commands to pass by them, so as to see that the column is not too much lengthened out, particularly in the march of large bodies on one road.

§ 85. The commander-in-chief and the subordinate commanders see

that all persons belonging to the combatants, and for duty, march in the proper places. The non-combatants, dismounted men, led horses of the officers and men, march with the trains of the second class.

§ 86. In parties near the enemy, *i.e.* advanced guards, front and flank detachments, rear guards in retreat, patrols, &c., the firearms should be loaded. In the main body, the arms are loaded only when an affair is anticipated.

§ 87. When passing through towns or villages, by farms, inns, wells, and such places, the commander-in-chief and the subordinate commanders turn their attention to preventing disorder, by closely watching that no one leaves the ranks.

§ 88. In passing defiles and crossing rivers the commander-in-chief watches—

1. That the troops do not crowd together at the entrance, or stretch out in passing through, but that they preserve their proper distances.

2. That, in crossing rivers in boats or ferries, each party knows when and after what other party it is to cross.

3. That, as soon as any troops have crossed, they form in conformity with the orders they have received.

4. That the drivers of the artillery and train do not dismount without orders.

5. That, in crossing fords, the men follow each other at the prescribed distance; that the wagons do not drive in one after another, but that each waits until the one in front has gained a certain distance, or even reached the opposite shore. In case of necessity, some officers are left to superintend the crossing. At difficult crossings a detachment may be left to assist the artillery and train.

§ 89. During secret or night marches, trumpet signals are not used; orders are given in a low tone of voice. In secret night marches, smoking and striking fire are forbidden.

§ 90. The commander-in-chief watches that, during halts, as well as on the march, the troops are protected by advanced and rear guards, flank detachments, and patrols; also, when in camp, as explained hereafter in Part II.

§ 91. Upon approaching the place where the troops are to halt, bivouac, or encamp, the commander-in-chief sends forward betimes officers of the staff, with non-commissioned officers from every party, to mark the place to be occupied by each.

§ 92. Since the advanced and rear guards are more fatigued than the other troops, on account of their continual state of vigilance and preparation, the commander-in-chief should relieve them by fresh troops from time to time.

Article 2.

Duties of the commander of the advanced guard.

§ 93. Upon commencing the march, he sends out front and flank detachments, as explained in §§ 12, 13, and 14.

§ 94. He places an officer, or non-commissioned officer, in charge of every party detached, and explains to them what patrols they are to send out, and exactly in what direction, and gives them special instructions as to what they are to do in different cases.

§ 95. During the march he watches that the detachments and patrols maintain their communication with each other and himself, and that they perform their duties strictly. Not blindly trusting to the advanced and flank detachments for security, he should see that his command marches in the best order, and in the habitual formation, according to the nature of the ground.

§ 96. When in pursuit of the enemy, he should never lose sight of him, follow all his movements promptly and continually, and ascertain his strength, direction, and designs, as well as possible.

§ 97. He should exert himself to obtain reliable and detailed information concerning the enemy and the country in advance, by means of patrols, spies, inquiries from prisoners and the inhabitants.

§ 98. He interrogates deserters and prisoners as to—

1. The names and strength of their regiments, and the detachment to which they belong.

2. What brigade, division, and army corps they belonged to; the names of their commanders.

3. Where their corps are quartered.

4. What are the dispositions of their regiments, brigades, and divisions. If the corps is in position, the strength of its advanced posts, and whether it is carefully guarded.

5. What corps or divisions are near their own; where they are, and at what intervals.

6. When and where they left their regiments; whether detachments were sent out from the corps, in what force, and whether they expected support.

7. Whether there were any orders or rumors in regard to intended movements, and exactly what they were.

8. Whether provisions and supplies were abundant, and the situation of the magazines.

9. Whether there was much sickness, or any epidemics, and the situations of the main and temporary hospitals.

In few words, endeavor to obtain information about every thing which

relates to the arrangements of the enemy, his strength, designs, and means of all kinds.

§ 99. It is impossible to place much reliance upon the testimony of prisoners and deserters: on the one hand, they may be too ignorant to give a definite answer; on the other, they may, from fear, reply according to the wishes of the questioner, or they may deliberately falsify. It is therefore necessary frequently to repeat the same questions unexpectedly, so as to compare the different answers, and also to compare the statements of different individuals.

§ 100. The commander of the advanced guard will, without delay, report to the commander-in-chief every thing observed with regard to the enemy, every considerable detention, his arrival at remarkable points on the road, (such as towns, rivers, &c.,) and his arrival at halting-places and camps.

§ 101. Upon occupying any town, the commander of the advanced guard should take every means to obtain information as to military movements; for this purpose, he should at once seize the archives and papers of the authorities of the place, and also the letters and papers in the post-office.

§ 102. Upon receiving from the advanced parties or patrols any intelligence, especially if it concerns the movements of the enemy, he should endeavor to verify it in person, or by means of reliable officers, and then make his own report positively and distinctly, so that no unfounded or exaggerated report may unnecessarily alarm the main body and arrest its march. The nearer he is to the enemy, the more frequently should he send reports to the commander-in-chief.

§ 103. These reports are made either verbally through aides, or in pencil. The time and place whence the report is sent should be noted on the paper. The greatest attention should always be paid to giving the correct names of towns, villages, streams, &c.

§ 104. Reports should be written with the greatest care and attention, for upon the comparison of reports the movements of the main body must depend. The most important qualities of the reports are clearness, perspicuity, precision, and reliability. They should contain only what the sender has seen himself, or properly inquired into. Every thing which he could not examine himself ought to be stated separately, with the degree of confidence to be reposed in the source whence it was derived.

§ 105. When sending a verbal report, the commander of the advanced guard must satisfy himself not only that the bearer can repeat it word for word, but that he comprehends its precise meaning. If possible, it is best to send with all such despatches some of those who were ocular witnesses of the subject of the report. If the report is important, and there is danger of the bearer being captured, it is best to send a duplicate after the lapse of a short interval. It is useful to number all reports, for

should one be captured or arrive before another sent previously, the series of numbers enables this to be detected. These remarks apply not only to the reports sent by the commander of the advanced guard, but, in general, to all reports sent in time of war. The adoption of a simple cipher will often be of advantage.

§ 106. The commander of the advanced guard attends to the repairs of the road, bridges, causeways, &c. If the repairs are heavy, and exceed the means at his disposal, he promptly informs the commander-in-chief.

§ 107. When the commander of the advanced guard is informed of the appearance of the enemy, he at once takes the measures rendered proper by the object of the march and the orders he has received: *i.e.*

1. He takes up a position in order to keep the enemy in check until the arrival of the main body; or,

2. Marches to meet and attack the enemy; or, finally,

3. Falls back upon the main body, endeavoring to delay the enemy as long as possible, so as to give the main body time to form and change from the order of march to that of battle.

§ 108. For camps, the commander of the advanced guard selects places advantageous for defence and secure against sudden attack. Entire detachments should not be placed in woods, defiles, towns, or villages, but they should be occupied only by a part of the command, the rest remaining near by. If there are defiles in advance, through which it is intended to march, their debouches should be occupied in force, in order to secure them for our ulterior movements.

§ 109. The commander of the advanced guard secures his camp by outposts.

Remark.—All the duties prescribed for the commander of the advanced guard in offensive marches apply equally to the commander of the flank guard during a march to the flank.

§ 110. In a retreat, the commander of the advanced guard follows the same rules as in the offensive, and takes great pains to remove all obstacles that might impede the march of the train and the main body. To repair the road, he detaches mounted engineer troops or working-parties, with the requisite tools, and pursues his march with the remainder of his command.

Article 3.

Duties of the commander of the rear guard.

§ 111. His principal duties, during a pursuit by the enemy, consist—

1. In indefatigable vigilance.

2. In the preservation of the best order and most severe discipline.

3. In sustaining the courage and spirits of his troops.

§ 112. He should use every exertion to ascertain the movements and

designs of the enemy, that he may be able to take in time the measures necessary to thwart and oppose him.

§ 113. He secures and guards his march as the advanced guard does on the offensive. By a turning movement, the enemy may force the rear guard to accelerate its march, and thus throw it into disorder; for this reason, the commander should pay especial attention to his flanks and to the cross-roads, by which the enemy might turn and attack him; if necessary, he may send out, instead of the usual small detachments, large and independent parties which can resist the attack.

§ 114. The rear guard should always be in a condition to form in order of battle; therefore, those portions near the enemy retreat by the rear rank, so that they have only to face about.

§ 115. That he may be able to preserve order in the rear guard when retreating in sight of the enemy, especially during the rigor of his pursuit, the commander ought not to conduct the retreat with all the troops at once, but with one portion fighting to protect the other, which latter in the mean time retreats, occupies an advantageous position in rear, and then receives the shock of the enemy in turn, thus allowing the first portion to pass by to the rear.

§ 116. The portion of the rear guard covering such a retreat ought to avoid engaging in a decisive combat, and merely check the enemy long enough to enable the portion in retreat to gain its newly-chosen position.

§ 117. The commander of a rear guard, in a retreat, should resort to all means of retarding the pursuit of the enemy; for this purpose, he orders the roads to be broken up, bridges to be destroyed, defiles to be blocked up, &c.

§ 118. During an offensive march, if there is no danger of an attack upon the rear of the column, the duties of the commander of the rear guard are as in peace: he superintends the preservation of order in the train, and picks up stragglers, &c.

§ 119. In all cases, the commanders of rear guards ought to report to the commander of the main body every thing that occurs to their party.

Article 4.

Duties of the commanders of advanced, flank, and rear detachments.

§ 120. They send out patrols, as laid down in § 14, to examine the greatest possible amount of ground on all sides, and to obtain information of the enemy; the number of the patrols must depend upon circumstances and the nature of the country.

In open country they are small, and at great intervals apart. In a rough, broken country, in foggy or very rainy weather, in night marches, the number of patrols is increased, and they remain near their detach-

ments. Patrols are not sent out in very dark nights, unless it is absolutely necessary.

§ 121. The commanders of detachments upon sending out patrols should instruct them in what direction to march, what intervals to preserve, and to what objects and places their attention should chiefly be directed.

§ 122. If there are defiles, woods, villages, &c., in front, the advanced and flank detachments should examine them by patrols before entering them, lest they should be suddenly attacked and cut off.

§ 123. On approaching a village, the commander of a detachment orders his patrols to seize, in some way or other, some of the inhabitants for interrogation, as to whether the enemy is concealed in the village, or its vicinity; whether he has passed through it; if he has passed, in what force, with what kind of troops, when, and in what direction. The inhabitants seized should not be dismissed until the whole detachment has left the village.

§ 124. Commanders of advanced, flank, and rear detachments, upon receiving reports from their patrols, should endeavor to verify them in person, particularly in important cases, and ought not to make their own reports until fully satisfied of the truth of those of the patrols.

§ 125. Commanders of detachments should endeavor to maintain a constant communication with the parties on their flanks by means of patrols. Flank detachments should not be long separated from their corps by impassable places, such as woods, marshes, lakes, &c.; but if these obstacles are not very extensive, the detachment and its patrols march on the outer side of them, in order to examine the country more fully.

§ 126. If the enemy appears, or attacks in force, the commanders of the advanced, flank, and rear detachments call in their patrols, and, without accepting combat, retreat upon their column under cover of skirmishers, merely endeavoring to delay the enemy as long as possible. If, however, an opportunity offers to capture one of the enemy's patrols, without delaying its own march, the detachment should undoubtedly avail itself of the chance.

CHAPTER III.

DUTIES OF PATROLS DURING THE MARCH.

§ 127. Patrols are parties of various strength detached either from troops on the march to examine the country, or from troops in position to obtain news of the enemy.

In this chapter, patrols of the first kind are alone treated of; the duties of patrols sent out by troops in position will be given in Part II., Chapter IV.

§ 128. The principal duty of patrols is to discover the enemy betimes, and thus secure the detachment to which they belong, as well as the rest of the army, against sudden attacks.

§ 129. Patrols should not consist of less than 12 or 15 men; for they ought to be able to attack the enemy's patrols by surprise, without too much risk.

§ 130. The men composing a patrol should not keep too close together, but stretch out as much as the ground and the force of the patrol will permit; never forgetting that it is very important that they should not all be captured at once.

§ 131. Patrols on the march move at a fixed distance from their detachment, keep up their communications, never lose sight of each other if they can avoid it, and form a continuous protective chain around the army.

§ 132. In a patrol of 15 men, the commander arranges them as follows: two or three of the most intelligent and best mounted men are sent in advance; if one is sent back with a report, the others remain in advance, and keep sight of the object reported. The rest of the patrol march according to the arrangement indicated in fig. 4, at 150 or 200 paces behind these advanced men, having their rear guard about 100 paces behind.

§ 133. Fig. 5 shows the arrangement of a patrol of 30 men.

Remarks.—1st. With every 10 men a non-commissioned officer is sent; 30 men and over are commanded by an officer.

2d. The men in front, on the flanks, and in rear of a patrol, are called *patrollers.*

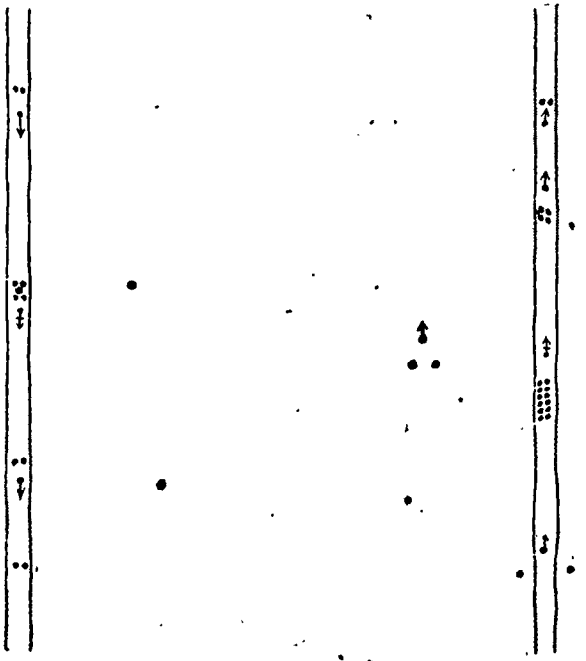
§ 134. The flank patrollers regulate themselves on the position of the patrol, which is on the road, and endeavor not to lose sight of it. They take care not to be separated from it by impassable obstacles; for this reason, when they meet with such places, they join the advanced patrollers, or the main patrol itself, until the obstacle is passed.

§ 135. During the night the patrols draw near to their detachment,

and endeavor to connect with each other by a chain of men, that the enemy may not slip through the intervals under cover of the darkness.

§ 136. It is impossible to regulate with exactness the space to be covered by patrols, but the following remarks will serve as guides:

Fig. 4. Fig. 5.



Patrols should cover and protect the march, but ought not to scatter so much as to be unable to assemble quickly if they meet the enemy. In a level country, where they can see a great distance in advance, there is less danger in stretching out than in a broken, wooded, or mountainous region. The main consideration is, that the patrol should be able to survey at a glance the whole of the space confided to it; the extent of this space will, therefore, depend upon the nature of the ground, as well as upon the weather, and whether the march is at night or in the daytime.

§ 137. A detachment destined to attack the enemy by surprise should not send out its patrols so far as one intended merely to reconnoitre; because the enemy, being warned by the appearance of the patrols, would be on the alert.

§ 138. Patrollers should look around carefully on all sides, and often halt to listen. If they hear the slightest suspicious noise, however indefinite in its nature, particularly at night or in an obstructed country, or if they observe dust, smoke, the glitter of arms, or any signs whatever of the enemy, such as the sound of footsteps, rumbling of wheels, noise

of horses, &c., they at once inform the nearest non-commissioned officer, who reports to the commander of the detachment. The whole party then halts, the flank patrols face outwards, the rear guard faces to the rear, and the march is arrested until the cause of the noise is ascertained, or the object which attracted attention examined.

Remark.—Reports should be made in a clear, calm tone of voice.

§ 139. The flank patrols ascend every eminence on the side of their route, and remain there, facing outwards, until the detachment passes by or sends another patrol to relieve them.

Remark.—In ascending a hill to reconnoitre, one man should precede the others, riding very slowly; when near the top, he takes off his cap and moves up just far enough to see over, covering himself by trees, bushes, &c., as well as possible; in this manner he may see the enemy without being discovered by them.

§ 140. Patrols turn their attention to every thing which may disclose the movements of troops passing by, notice the direction of their march, &c.

§ 141. Patrols should examine carefully every thing which may conceal the enemy, such as houses, woods, coppices, ravines, &c. In passing by such places, the patrols endeavor to ascertain whether they are occupied by the enemy, and then either occupy them themselves, or pass by with the utmost precaution. Defiles, bridges, ravines, hollow ways, dikes, and rivers, should be carefully examined; having passed them, the front patrollers should at once place themselves on the highest bank to observe the environs.

§ 142. A special patrol of 2 or 3 men is sent to examine any remarkable object which is too far off to be visited by the flank patrollers; the rest halt, and await their return: such patrols should move at a moderate gait.

§ 143. If it is necessary to pass through a village, the operation is conducted as follows. One of the front patrollers approaches it. If it is in the day, he rides through several streets and asks for the chief person of the place; in the mean time the other front patrollers ride along the skirts of the village. Having found the chief person of the place, the front patroller conducts him to the commander of the advanced guard, which now approaches the village; the patroller then rides through the village with his comrades, and halts on the farther side in some elevated position. There they await the arrival of the advanced guard.

§ 144. If a village is to be passed at night, the front patrollers go quietly to the first house, call out its master, take him away, and obtain the necessary information from him; afterwards they go for the chief person of the place.

§ 145. Before entering a woods, the front patrollers must ascertain that

the enemy does not occupy the skirts, and one or two men should ride around the whole woods, if it is not too extensive; all the cross-roads should be examined to the distance of several hundred paces by flank patrols, who afterwards overtake the patrol. Before entering open fields in a forest, patrollers should ride all around the edges.

§ 146. The patrols detain all persons met on the road, and send them to the commander of the detachment for examination. The commander retains, under guard, all who are suspicious characters, as well as those who have witnessed important movements, or whose testimony is of such importance as to need verification.

§ 147. Upon the appearance of hostile patrols and patrollers, flags of truce, or deserters, our own patrollers, even if in considerable force, at once inform the commander of the patrol, who, satisfying himself of the true state of the case, at once takes the necessary measures.

If he sees a weak patrol of the enemy, or single soldiers straggling off for pillage, he quietly endeavors to seize and disarm them; he stops the flag of truce, blindfolds, and places him under the charge of a trustworthy soldier, who, not allowing him to turn back, conducts him to the commander of the detachment.

§ 148. Whenever the commander of a patrol perceives, from a distance, the approach of the enemy in strong force, he at once informs the commander of the detachment, and at the same time endeavors to get nearer the enemy to ascertain his strength, &c.; finally, he retreats upon the detachment without exposing himself.

Remark.—In this, and all similar cases, the party falling back should move as slowly and in as good order as possible.

§ 149. A patrol only gives notice of the approach of the enemy by firing when it is suddenly driven in and has no time to send a report. Therefore, a patrol should be in no hurry to fire when it discovers the enemy; for it may happen that we see him before he discovers us, and then, if we are only engaged in watching him, we should endeavor to fall back on the detachment without being observed.

§ 150. Upon the first shot fired by the patrollers, the whole patrol forms, and the commander acts according to circumstances. If the enemy is the stronger, he falls back upon the detachment, covering himself by skirmishers; but, if it is possible, he endeavors to capture the enemy's patrollers, and sends back those taken to the commander of the detachment.

If attacked by surprise, the patrol should defend itself to the utmost, and fire a few shots, even if in the air, to warn the detachment of its danger. In such cases, it is not always advisable to retreat by the direct road.

Remark.—The commanders of parties must bear in mind that there

are few circumstances which can justify the surrender of cavalry; proper precautions on the march render a surprise next to impossible; and when a party of cavalry is attacked, no matter how suddenly, or by what superiority of force, a determined and instantaneous charge will always enable the greater part to escape in safety. Officers and men should therefore always have their wits about them, and their weapons in constant readiness for use.

§ 151. During the march, patrols are not permitted to wander out of the way, nor to halt to rest at their discretion.

§ 152. To be certain that their orders are executed, the commanders of patrols should be alternately at the head and on the flanks; in a word, everywhere, that they may see and superintend every thing for themselves.

§ 153. Should it happen that two patrols or patrollers meet on the march, even if they belong to the same regiment, they should challenge each other, as directed in § 337.

§ 154. During halts, the patrols continue to secure the troops against a sudden attack. Choosing positions from which it is easy to examine the country around, they halt in the same order as that in which they marched, and face outward.

CHAPTER IV.

IN REFERENCE TO REGULATING MARCHES ACCORDING TO THE LOCALITY.

Of advanced guards.

§ 155. It is but seldom that any one arm is exclusively employed when near the enemy; on the contrary, it is usual to operate with a combined force of cavalry, infantry, and artillery, so that it may be always possible to employ one or the other arm, according to circumstances and the locality.

§ 156. If the main body is composed of the different arms, then the advanced guard is similarly constituted, that it may be able to act in all localities.

§ 157. The composition of such an advanced guard depends—

1st. Upon the object and nature of its intended operations. During marches in pursuit it is reinforced by cavalry; but if it is to make an obstinate resistance, it is strengthened with much infantry and artillery. In general, light cavalry are the best for advanced guards, wherever the nature of the ground permits them to operate; but infantry are necessary to support them. Mounted rifles and mounted engineer troops are of great service in advanced guards.

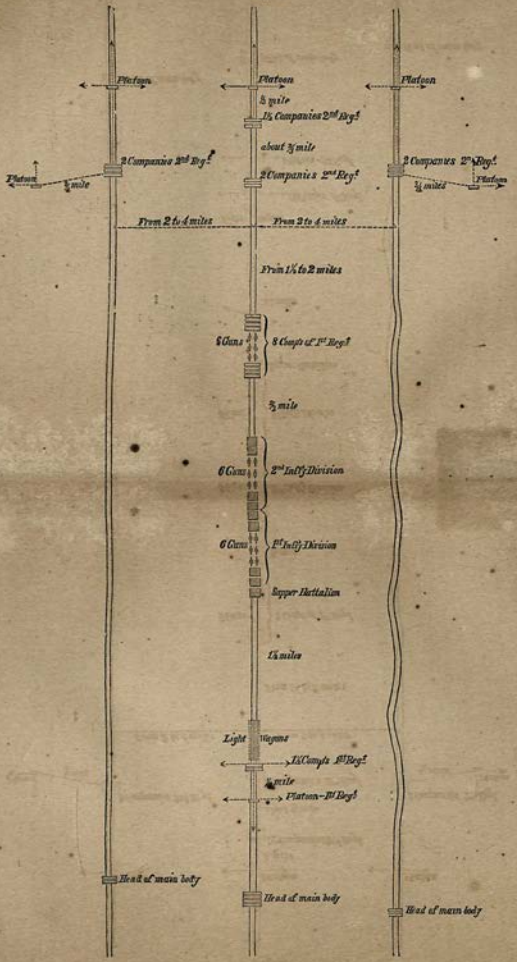
2d. The composition of the advanced guard depends also upon the locality: if the ground is broken, much infantry is required; if it is open, much cavalry, and, in general, light troops.

§ 158. The order of march of an advanced guard depends, principally, upon its composition, the order of march of the main body, the locality, &c. The main rule is, that it should never be too much divided, so that there may always be a considerable force in hand to seek the enemy more boldly and detain him longer. Therefore, even when the main body moves in several columns, the principal part of the advanced guard marches on the main road, sending only small parties on the others to watch the enemy and detach patrols as far as possible in all directions. In an open, level country, the cavalry marches at the head; in a broken country, there is only a small detachment of cavalry at the head, to furnish advanced detachments and patrols. An advanced detachment of cavalry, which sends out patrols in front and on its flanks, moves at the distance of a few miles in front of the advanced guard. Small detachments of cavalry move in a line with it on the other roads; also others on the flanks of the main advanced guard, to secure it against being turned. All the front and flank detachments maintain a constant mutual communication by means of patrols, and thus keep in sight the whole space in front of the main body over a great extent. But if the flank columns of the main body march at a great distance from the main road followed by the advanced guard, then, in addition to this last, each flank column detaches a small advanced guard for its own security.

§ 159. If the advanced guard is composed of different arms, its distance from the main body depends not only upon its strength, but also on the following circumstances: 1. On its composition. Cavalry may advance much farther than infantry. 2. Upon the locality. The more fully the nature of the country secures the advanced guard against being turned, the farther may it move from the main body. 3. Upon the object in view. Prior to defensive combats in position, it is advantageous to have the advanced guard as far from the main body as possible, in order to secure time for making the necessary arrangements; but if the main body is already concentrated for a decisive attack upon the enemy, it is sometimes well to be entirely without an advanced guard; during a pursuit, the main body should follow the advanced guard as closely as possible. 4. Upon the order of march of the main body. The longer the time needed by the main body to form in order of battle, on account of the intervals between the columns, the nature of the ground between them, the length of the columns, &c., so much farther forward should the advanced guard be pushed. In general, the distance of the advanced guard from the head of the main body should be a little greater than the interval between the outside columns of the main body.

March of an Advanced Guard composed of 1 *brigade of Cavalry,* (20 *companies,*) 2 *divisions of Infantry,* (8 *battalions,*) 1 *battalion of Sappers,* 6 *pieces of horse and* 12 *of foot Artillery.*

Fig. 6.



§ 160. Fig. 6 gives an example of the arrangement of an advanced guard composed of one brigade of light cavalry, 8 battalions of infantry, one battalion of sappers, 6 pieces of horse artillery, and 12 pieces of foot artillery; the main body following in 3 columns. Disregarding minute details, this is established as the basis of the arrangement of an advanced guard, without regard to the ground.

Whatever slight changes may be made necessary by the nature of the country can easily be made with the aid of a map and the special information obtained in other ways.

§ 161. If the country is partially broken and obstructed, it is advantageous to have four or five companies of infantry just behind the leading detachment of cavalry, to examine places that are difficult or dangerous for the latter.

§ 162. Upon the plains the patrols are of cavalry; in a mountainous region, of infantry. In the latter case, not only the advanced detachments and patrols are of infantry, but also the head and rear of every column; the cavalry and artillery march in the middle, under the protection of the infantry.

§ 163. In passing through a village, the infantry enter it first, if there are any with the advanced guard; the cavalry either ride rapidly around it, or, according to circumstances, halt a little before reaching the village, and wait until the infantry have passed through.

§ 164. The passage of important bridges, ravines, and defiles, should be effected in the same manner, the infantry examining them. As soon as the infantry have crossed and formed on the other side, the cavalry send out patrols to a great distance to examine the ground in front, before the main body of the advanced guard begins to cross.

The advanced guard, having crossed rapidly, forms in front of the passage to cover the debouche of the main body. The distance of such a position from the passage should be such that, in the event of being attacked, the advanced guard may not be too quickly forced back upon the main body while debouching, and that the latter may have ample time to form without disorder.

§ 165. Since attacks should be most expected when passing through defiles, or when issuing from them, they should be traversed rapidly, and with the most extended front possible, to prevent the column from stretching out. In passing long defiles, the troops should occasionally halt for a moment, to close up and re-establish order.

§ 166. As for the rest, an advanced guard, possessing a certain degree of independence, without neglecting any of the precautions here laid down, should not be too apprehensive, and, in examining the country, ought not to detain itself with objects which, from their nature, cannot conceal the enemy in sufficient force to make him dangerous to the advanced guard.

§ 167. In very mountainous regions it is necessary to rely upon the infantry alone; the cavalry and train remaining in rear, and not entering the defiles until they have been occupied. Here the infantry patrols are sent out as far as possible, and occupy the heights from which the direction of the columns may be seen, until relieved by the patrols of the rear guard, which is also of infantry. In this manner the cavalry, which the enemy would attack in such places in preference, is protected. Not a gorge or defile should be left unexamined; for in the mountains an attack may be expected at any moment.

§ 168. In a wooded country the commander of the advanced guard takes nearly the same precaution as in the mountains.

If the forest is deep, but not broad, detachments of cavalry ride along the skirts, which are occupied by infantry skirmishers as supports; if the forest is dense, but not deep, the infantry lead. The infantry place themselves along the skirts of the wood on both sides of the road; the cavalry then passes through at a fast trot, forms on the plain beyond, and there awaits the rest of the column.

§ 169. When the road passes through a country but little obstructed by defiles, villages, or other obstacles to the movements of cavalry, and there is no infantry with the advanced guard, mounted rifles are very useful; finally, the enemy, in retreating through such a country, leaves infantry at these obstacles to arrest the pursuit of the cavalry, and delay until the arrival of the infantry; in such cases mounted rifles or dismounted dragoons will produce sure results by acting against the enemy's infantry.

OF THE MAIN BODY.

§ 170. It remains to be said, in reference to this, that the nature of the country must determine its order of march, whether cavalry or infantry are to lead. If the country is broken, particularly if it is wooded, there is great danger in placing the cavalry at the head; for it may not only be unable to act, but, if forced to retreat, may carry disorder into the infantry following.

The artillery should march in the midst of the other troops; but a few pieces may move with the head of the column, to protect it in case of meeting the enemy suddenly.

§ 171. If there are infantry, then in traversing extensive forests, in which parties of the enemy may easily conceal themselves, the flank detachments and patrols of cavalry are replaced by infantry.

OF THE REAR GUARD.

§ 172. In § 19 the duties of a rear guard in a retreat are described as being important, and sometimes even more important than those of the advanced guard in the offensive. Therefore, not only the force but the

composition of the rear guard should correspond to the importance of its duties; if the main body consists of troops of the different arms, the rear guard should be composed in like manner.

§ 173. Its order of march must depend not only upon the locality, the number, direction, and separation of the roads, and the degree of security of the flanks, but also upon the order of march of the main body, and the manner in which the pursuing enemy operates. Frequently the march of the rear guard becomes a fighting retreat. If the enemy does not follow directly on its heels, its arrangements will generally be nearly the same as those of an advanced guard in the offensive; but in this case it is necessary to turn the closest attention to the roads on the flanks, because the pursuing enemy usually endeavors to turn the retreating rear guard with a part of his force, in order to keep it constantly in retreat and prevent it from holding the positions it has selected. For this reason, there should be on the flank roads not only patrols from the rear guard, but parties strong enough to hold the enemy in check.

§ 174. In districts where there are extensive plains, the rear of the rear guard is reinforced by all its cavalry, so that the infantry may move forward to occupy any hills, woods, or other favorable positions.

§ 175. As in a mountainous, wooded, or broken country, the cavalry of the advanced guard marches in rear of the other troops, so, in a rear guard retreating through a similar country, the cavalry forms the head of the column, marching under the protection of the infantry, with which latter there is only a small party of cavalry for sending rapid information of the approach of the enemy.

§ 176. It is stated in § 115 that, to preserve the requisite good order, the retreat of the rear guard should not be by all the troops at once, but by alternate portions, so that one part may fight to protect the retreat of the other. According to this, upon approaching a defile or bridge, around which the cavalry cannot pass, the greatest part of it should be sent on early to pass through.

A few guns are placed in front of such obstacles, under the protection of a party of infantry, to keep the enemy at a distance, while the rest of the infantry and artillery pass the defile, availing themselves of all the heights on both sides to protect those in retreat against the attack of the enemy, and to cover the flanks. Therefore, the ground should be examined early, that it may be occupied betimes for defence by infantry and artillery. After having passed the defile, the cavalry forms in order of battle, out of cannon range.

If the enemy endeavors to pursue the rear guard beyond the defile, the cavalry should, if the ground permits, stop or delay his pursuit by an attack upon the front and flanks of the head of his column, so as to give the infantry and artillery time to gain the necessary ground. In such

cases, there is an advantage in having passed the defile, so as to attack with a superior front the head of the enemy's column as he debouches.

§ 177. If a village is to be traversed, it is first occupied by a sufficient force of infantry, and the cavalry then either passes around it, or, which is quicker, rides rapidly through it, if this can be done without masking the fire of the infantry. Having passed beyond the village, the cavalry and horse artillery come into position to cover the retreat of the infantry.

§ 178. In a retreat, dismounted rifles or dragoons, availing themselves of the obstacles of the ground, may arrest the pursuit of the enemy, without fearing, as in the case of infantry, to remain behind the main body of the rear guard.

§ 179. Finally, if the enemy acts imprudently, the rear guard may form ambuscades for him, or force him to slacken the pursuit by resuming the offensive for a time.

§ 180. The commander of the rear guard should always regulate himself upon the movements of the main body, always holding every position as obstinately as possible, lest a premature retreat on his part should bring the enemy suddenly upon the main body.

PART II.

PRECAUTIONS TO BE OBSERVED IN CAMPS* FOR SECURITY AGAINST THE ENEMY.

CHAPTER I.

DUTIES OF ALL PARTS OF THE OUTPOSTS.

ARTICLE 1.

Of the outposts in general.

§ 181. The outposts are detachments upon whom is imposed the duty of securing the other troops against sudden attacks.

§ 182. They are independent of, and in addition to, the camp and quarter guards, whose duty it is to watch over the interior order and police of the camp.

§ 183. Light cavalry are employed on outpost duty wherever the ground permits them to act; in cases of absolute necessity, the outposts consist of infantry.

(*) The term *camp* is here used in its most general sense, including all the arrangements of the troops when halted, whether in tents, huts, bivouac, or villages, provided they are not in cantonments or winter quarters. The term *encampment* refers particularly to a camp of tents or huts.

§ 184. The outposts consist of:

1. A chain of double vedettes.

2. Pickets, which are the immediate supports of the vedettes.

3. Main guards, placed as supports in rear of the pickets.

§ 185. If the outposts are pushed very far to the front, or if the nature of the ground is such as to render their retreat difficult, parties, called *reserves of the outposts*, are placed between the outposts and the troops guarded, to serve as a reserve and support for the former.

§ 186. The outposts should enclose all the places and observe all the roads by which the enemy can approach the camp guarded.

§ 187. The chain of outposts is placed in front of the general position of the troops, so as to intersect all the roads leading towards the enemy. It forms a curved line, falling back on the flanks.

§ 188. The outposts should be pushed so far to the front that, while in no danger of being cut off, they may give timely notice of the enemy's approach, and keep him long enough in check to enable the troops guarded to prepare to receive him.

For this purpose the chain of mounted vedettes is usually placed at not more than three miles in front of the camp; the pickets not more than three-fourths of a mile in rear of the vedettes; the main guards at about the same distance behind the pickets.

§ 189. The interval between the pairs of vedettes composing the chain should be such that in the daytime they can see each other, and in the night hear every thing that happens between them.

§ 190. The object of the pickets and main guards being merely to receive the chain, they are composed of small numbers of men. Therefore, a picket consists of about a platoon, and a main guard of about a company.

§ 191. The commander-in-chief determines approximately the general direction and extent of the chain; in conformity therewith, there are detailed the number of men necessary to guard the space designated. The subordinate commanders carry out the details as follows:

§ 192. A field officer, or captain, commanding two companies, conducts them to the place where the main guard is to be posted; leaving one company there, he takes the other to form the pickets and vedettes, and accompanies one of the platoons himself, to superintend the proper posting of the vedettes. Separating gradually,—one moving to the right, the other to the left,—the two platoons continue to move on until the interval between them is about three-fourths of a mile, and their distance from the main guard about the same; they then halt. The commander of each platoon, having cut off 6 men for patrols and carrying reports, divides the rest of his platoon into 3 reliefs.

He then conducts the first relief to the chain. The non-commissioned officer designated to post the vedettes accompanies the relief; if there is

but one officer with the platoon, the senior non-commissioned officer takes command of the picket until the return of the officer.

The commander of the picket having conducted the first relief to one flank of the line he is to occupy, posts the vedettes so that they may be in full communication with the vedettes of the neighboring pickets. The captain of the company which furnishes the pickets will command the more important of the two pickets.

§ 193. Supposing each platoon to consist of 30 men, the main guard will consist of 60, and each picket, deducting the six men for patrols, of 24 men; each picket will thus furnish 4 pairs of vedettes, the two together 8 pairs; supposing the intervals between the pairs of vedettes to be from 300 to 500 paces, the line occupied will be from 2,400 to 4,000 paces. In this manner two companies, each 60 strong, will furnish a main guard and two pickets, which may watch a space of about 2 miles. (See fig. 7.)

ARTICLE 2.

Duties of the vedettes of the advanced chain.

§ 194. In each pair of vedettes, one is designated as the chief vedette. Both remain mounted; the one in front has his carbine advanced, or pistol drawn; the vedette in rear is permitted to sling his carbine.

§ 195. For the purpose of challenging all who approach the chain, the vedettes are furnished with the countersign; they are to remember it and keep it secret.

§ 196. They must be always vigilant and cautious; therefore, every thing which may in the least distract their attention is strictly forbidden, such as talking, smoking, whistling, singing, &c.; even horses that are much in the habit of neighing are not placed in the chain.

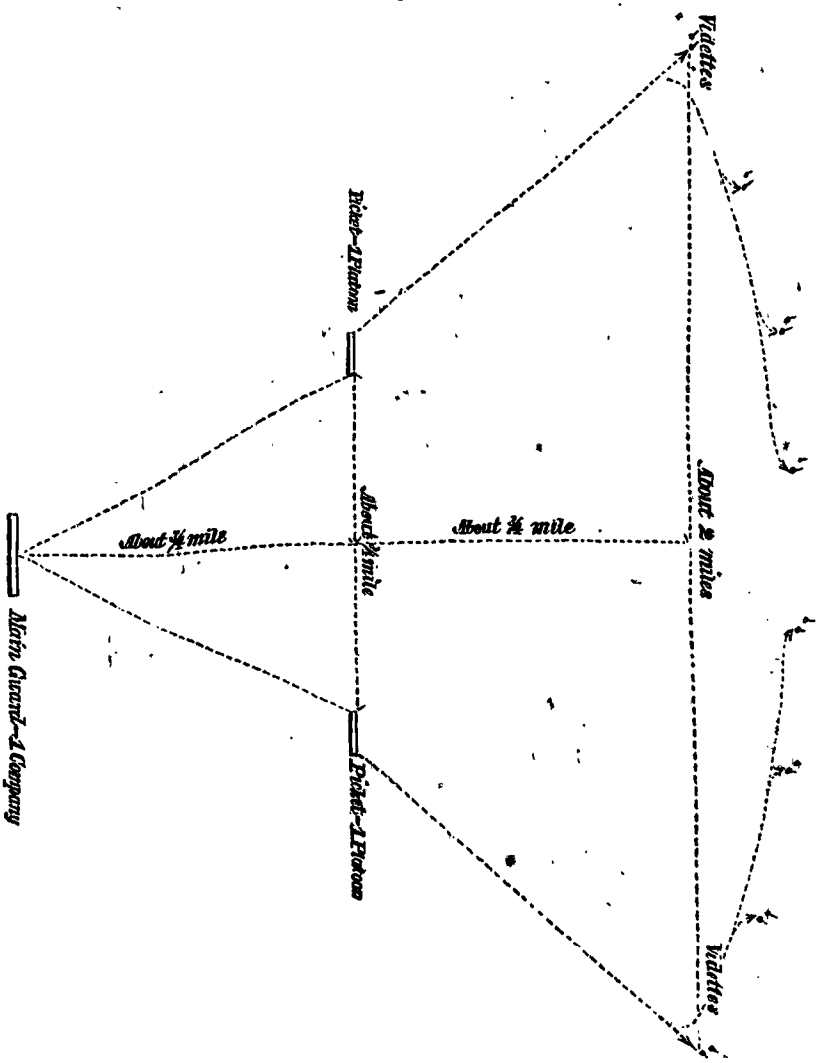
§ 197. They must keep in view all the space between them, so that individuals may not cross clandestinely.

Therefore, one man in each pair should, in turn, look and listen carefully, lest any thing occur in the direction of the enemy or of the next pairs; the other man places himself some paces behind the first, to relieve the tension of sight and hearing.

During the day, in open country, they merely look towards the neighboring pairs; in a rough, obstructed country, at night, or in a fog, when it is impossible to see the next pairs, one man, in his turn, carrying his weapons as prescribed for the front vedette in § 194, must constantly ride along the chain to the next pair, or until meeting one of its members. When they are posted in sight of the enemy, or very near him, they may give each other preconcerted signals, (such as tapping the carbine, or some such noise,) being careful, however, that the signals employed are of such a nature as not to attract the attention of the enemy.

§ 198. Upon observing any thing whatever in the direction of the enemy, as, for example, extraordinary movements, dust, noise, kindling or

Fig. 7.



Arrangement of the chain of vedettes, pickets, and main guard furnished by two companies.

extinguishing fires, changes in his outposts, drawing them in or reinforcing them, &c., the chief vedette sends in the other to inform the commander of the picket, remaining himself on the spot to continue watching what attracted his attention.

In the daytime, when in full view of the picket, instead of one of the vedettes riding in to report, they may, in certain cases, act as follows: If any thing suspicious is observed in the direction of the enemy, such as dust, glittering of arms, &c., one of the vedettes will move his horse in a circle at a walk; upon this, the commander of the picket will take 3 or 4 men and at once ride to the vedette to examine the matter for himself. If the vedettes discover a party of the enemy advancing towards them, but at a great distance, one of them will move his horse in a circle at a trot, on which the officer will act as just prescribed. If the vedettes discover a party of the enemy coming towards them, and not more than a mile off, one of them will at once move his horse in a circle at a gallop, on which the officer will act according to circumstances.

By both the vedettes riding in a circle at the same time, in the same and opposite directions, and at the different gaits, the number of signals may be much increased.

§ 199. Unless they have special orders to the contrary, the vedettes permit no one to cross the chain towards the enemy, except officers' detachments and patrols personally known to them. If they observe any one attempting to steal over, they detain him until the arrival of the relief or patrol, and then send him to the commander of the picket.

§ 200. If the commander of the picket approaches in the daytime, they do not challenge him, but both vedettes advance carbine or draw pistol, and the chief vedette alone reports whether any thing worthy of the slightest attention has been observed.

§ 201. If any person, not personally known to the vedettes, approaches along the chain, the front vedette halts him at 50 paces from the post, by crying, in a low tone, "*Halt! Who comes there?*" If the reply is satisfactory, and the orders are to pass persons with the countersign, he then cries, "*Advance, and give the countersign!*" or, if it is a party that has approached, he directs one person to advance and give the countersign, not allowing him to approach nearer than ten paces for the purpose. If the party challenged does not reply, and persists in attempting to pass the chain, the front vedette cocks his piece, goes to meet him, aiming at him, halts close to him, and twice repeats the challenge, "*Halt! Who comes there?*" If the person does not reply to the third challenge, the vedette shoots him.

Remark.—It is to be understood that vedettes fire only upon persons who are armed, or resist; with regard to others who approach the chain without the countersign, they are merely stopped, and treated as directed in the following section.

§ 202. If the person approaching has the countersign, then, in the daytime, the vedette allows him to pass, but not nearer than 10 paces to the post; if he has not the countersign, the vedette directs him to halt at 50

paces from the post, and turn his back to it, (if he is on horseback, he is made to dismount,) and awaits the arrival of the relief or patrol, to whom he turns him over as a prisoner, to be taken to the commander of the picket.

§ 203. In the night, when it is impossible to recognize the faces of those approaching, the vedettes act in the following manner: If the reply to the challenge, *"Halt! Who comes there?"* is, *a general, an officer, patrol, relief,* or *rounds,* the countersign is demanded, as already explained, and if it is properly given, the party is allowed to pass. If the party does not know the countersign, one of the sentinels at once rides to the commander of the picket and receives his orders. But other military employés, and enlisted men, even if they have the countersign, are not permitted to cross the chain at night, but are treated as is directed in the preceding section for people who do not know the countersign in the day.

§ 204. Whilst the chief vedette interrogates the person who has approached the chain, the other cocks his piece, and watches in all directions with redoubled attention.

§ 205. If a flag of truce, or, in general, any one whose business is of such a nature as not to permit him to await the arrival of a relief or patrol, approaches the chain, the chief vedette sends in the other to report to the commander of the picket.

Flags of truce are not received at night, except under very peculiar circumstances.

§ 206. If any one whatsoever approaches the post from the direction of the enemy, even if of their own command, the vedettes halt them, and do not allow them to approach within 50 paces; the junior vedette then rides in to report to the commander of the picket.

The only exception to this rule is the case of a returning patrol, if it consists of men of the same regiment as the vedettes, and if the latter recognize the persons of the officer and men composing it.

§ 207. If deserters from the enemy approach, the vedette halts them also at 50 paces, orders them to lay down their arms, to dismount, if mounted, and to retire a little beyond the 50 paces.

Then the junior vedette rides in to report to the commander of the picket, while the other, cocking his piece, watches the new arrivals.

§ 208. If the vedettes discover the approach of the enemy, they at once inform the commander of the picket; but if he appears suddenly in front of the chain, they give the alarm by firing. They should fire only when he approaches resolutely: to fire without necessity, and without being satisfied that it is really the enemy, would be merely to create useless alarm.

§ 209. Upon hearing a shot, the other vedettes redouble their vigilance and attention, exerting themselves to discover what is going on where

the shot was fired, but not leaving their posts without receiving a signal or special orders to do so, unless driven in, when they will rally on the picket.

Article 3.

Duties of the commanders of the pickets.

§ 210. With every picket there must be an officer and a trumpeter.

§ 211. The officer detailed for duty with a picket should have the *parole, watchword,* and *countersign* for the day.

Upon reaching his post, he communicates the *countersign* to all the men; he gives the *watchword* only to the non-commissioned officers who are to be sent out with patrols and reliefs.

§ 212. Having conducted his platoon to the position it is to occupy, he acts as directed in § 192, and posts the 1st relief in person. The non-commissioned officer who is to post the next relief rides with him; if there is no other officer present, the senior non-commissioned officer remaining with the picket sees that all the men remain mounted and fully ready to move, until the return of the commander.

§ 213. The first relief is posted as in time of peace.

§ 214. When posting each vedette, the commander of the picket gives them their instructions where to stand, and to what their attention should be chiefly directed; he points out the direction in which they are to retreat in case of necessity, and designates the number of each post. He designates the most reliable and experienced man of each pair of vedettes as chief vedette.

§ 215. In arranging the intervals between the pairs of vedettes, he should endeavor to post them in positions whence they can see as far as possible in all directions and at the same time be as little conspicuous to the enemy as practicable; for this purpose it is best to place them on the heights during the day, and behind the hill, at its foot, during the night.

§ 216. The intervals between the pairs should be such that they can see all the ground between them; no precise rules can be laid down in respect to this, as in some cases the chain will be close, and in others scattered; as in an open country there is no advantage in an unnecessarily close chain, so in an obstructed country it is improper to place the vedettes far apart. In some localities it may be necessary to post them not more than 100 paces apart, while in others the intervals may be 500 paces.

§ 217. If the chain, or a portion of it, is placed in advance of a stream, ravine, wide ditch, or other obstacle, the commander of the picket must see that the passages across are in good condition, so that in case of attack the vedettes can easily rally on the picket, and the latter have free communication with its vedettes.

§ 218. It is also absolutely necessary that the commander of the picket should see that no pair of vedettes is entirely composed of men ignorant of the duty, but that as far as possible one of them should be an experienced and reliable soldier, to be designated as chief vedette; he should also watch that no near-sighted person is placed on the chain during the day, nor any one dull of hearing in the night.

§ 219. Upon posting the chain of vedettes, it becomes evident whether the picket can furnish a sufficient number of men to keep one-third on duty; if there is a deficiency in the chain, the requisite number of men are taken from the picket, which is reinforced from the main guard. If there are more men than necessary, the commander of the picket disposes of the supernumeraries in accordance with the orders of the commander of the main guard.

§ 220. Having posted the 1st relief of vedettes, the commander returns to his picket, and places it in the best position; that is to say, one convenient for receiving and supporting the vedettes, not visible from the side of the enemy, and which the latter cannot pass around; it is selected in preference on a road leading towards the enemy, and especially at cross-roads.

§ 221. At the picket a sentinel is posted, mounted or dismounted according to the locality, and so placed that he can see the whole or the greater part of the chain, and observe what occurs there. If this sentinel is mounted, he carries his weapons as directed for the front vedette in § 194.

§ 222. After this, the commander orders the men to dismount; during the day, one-half of the men at a time may be allowed to unbit and feed their horses. In the night, all the horses ought to be bitted, and one-half the men in perfect readiness to mount. One-half of the men may be allowed to sleep in the daytime. Under certain circumstances it may be necessary to keep the whole or a part of the picket mounted during the night.

§ 223. Having arranged the vedettes and picket, the commander reports his dispositions, as well as every thing he has observed, to the commander of the main guard, unless the latter was present at the time.

§ 224. All reports concerning the outposts are made either verbally, through a non-commissioned officer, or in pencil, with the most concise expressions, and not observing the ordinary forms. Here the main point is, that the report is well founded and clearly expressed. The report should be numbered, state what party it refers to, and the date and hour when sent.

§ 225. For patrols and orderlies, 6 men are detailed from the picket, independently of those who supply the vedettes; two of these, besides

any already sent out, should always be in readiness to start in an instant; the others may rest, and in the day unbit their horses.

§ 226. The pickets should always be vigilant, careful, quiet, and ready to move. The arms ought to be loaded, the men fully accoutred, all the horses saddled, and the whole picket in an effective condition; the horses are sent to water in parties of two or three at a time, under charge of a non-commissioned officer, and take every thing with them. The horses should not be hobbled or picketed. The use of fire is forbidden, without special permission. The men change their dress, from the uniform to the overcoat, and the reverse, one at a time. Under peculiar circumstances, in the night, one-half the men (by turns) may be allowed to take off their shakos and sleep, but the rest must be on the alert, or stand to horse.

§ 227. When a relief is sent out, which habitually is done every two hours, but oftener in bad weather, severe cold, or after great fatigue, the whole picket mounts, and so remains until the return of the relief.

§ 228. It being easy for the enemy to approach the chain during the night, in order to make a sudden attack at daybreak, the whole picket should be mounted some time before dawn.

§ 229. If it appears to be necessary to draw in the vedettes upon the picket, or to close in the vedettes on each other for the night, then, by the special order of the commander of the outposts, the chain removes to its new position upon the approach of twilight. The decrease of the intervals between the pairs of vedettes is regulated by the darkness of the night and the weather; in a dark night, with heavy rain, a thick fog, or, most especially, with a wind blowing towards the enemy, this interval is made very small. The extra men needed in these cases are supplied by the main guards or the reserve of the outposts. At daybreak, the chain again advances to the position designated for it during the day.

§ 230. If the ground occupied by the vedettes during the day is so advantageous that it would be injurious to throw them back at night, and it is necessary to decrease their distance from the picket, then the chain is left where it stands, the intervals between the vedettes are diminished, and the picket moved up closer to the chain.

§ 231. Besides the original posting of the chain, the commander of the picket should also superintend its removal to the night position; and if the vedettes were originally posted at night, he should be present when they take up their new position for the day, also when his picket is relieved by other troops. The other reliefs of the vedettes not only may, but ought to be made by non-commissioned officers, so as not to take the commander from his picket, where his presence may be very necessary.

§ 232. All the men of a relief, while marching, carry their weapons as prescribed for the front vedette in § 194, and the act of relieving is per-

formed as in time of peace; the instructions are given quietly, and all orders in a low tone.

§ 233. The returning relief is received at the picket as in time of peace, with the difference that the whole picket is mounted.

§ 234. When the rounds arrive at a picket, they are received as directed below in Chapter III., *on visiting the outposts;* in this case, all orders are given in a low tone, and the necessary quietness is preserved.

§ 235. At the proper hours, the commander of the picket will send out patrols to verify the exactness of the vedettes, (see Chapter III.;) he should also despatch the reliefs punctually, and report to the commander of the main guard after every relief, although there may be nothing new.

§ 236. When a report comes in from the chain of the arrival of men without the countersign, or in the night of those who (see § 203) are not entitled to pass with it, the commander of the picket at once sends a non-commissioned officer and two men to bring them in. Upon their arrival, he demands the *parole*, *watchword*, and *countersign;* and if all their replies are correct, he permits them to pass freely; but if they do not know the parole, he sends them, under guard, to the commander of the main guard.

§ 237. If a flag of truce or deserters from the enemy arrive at the chain, the commander of the picket goes there himself, taking with him a non-commissioned officer and some privates. When near the flag of truce, he demands who he is, by whom and to whom sent; and then, having blindfolded him, directs the non-commissioned officer and two privates to conduct him to the commander of the main guard. If deserters have arrived, he directs his escort to take their arms, and bring them within the chain; he then calls up one of the deserters and questions him, and having ordered them all to be searched, lest they carry concealed weapons, he sends them to the commander of the main guard, with an escort in proportion to their number.

§ 238. If a report arrives from the chain of any thing important in the direction of the enemy, or of his appearance, the commander of the picket verifies it in person, at once sends a report to the commander of the main guard, and informs the neighboring pickets; in the mean time the picket mounts.

§ 239. If it appears that the enemy, in small force, merely alarms the outposts, the vedettes commence firing, the pickets advance, and either endeavor to overthrow the enemy's detachment or to keep him in check until the arrival of the main guard or the reserve of the outposts.

§ 240. If it appears that the enemy is not in superior force, then the pickets should attack and drive him off; afterwards they resume their original positions.

§ 241. If it is ascertained that the enemy attacks vigorously in force,

and has already approached so near the chain that the vedettes are in danger of being cut off, the commander of the picket gives them the signal to retreat, and, using them as a chain of skirmishers, he begins, if it is necessary, his retreat upon the main guard, again reporting the state of affairs to the commander of the latter, and the nearest pickets.

§ 242. While retreating, he should endeavor to delay the enemy as long as possible, also to observe, as well as he can, his force, kind of troops, and direction, taking care, however, not to be cut off.

§ 243. In the night the enemy does not see the strength of the picket, and moves over ground with which he is unacquainted, while the picket knows the ground. Therefore, it is sometimes advantageous for cavalry pickets, in the night, to commence their retreat by attacking: if the attack fails, nothing is lost, and the picket falls back upon the main guard; if it succeeds, even if it is impossible to drive the enemy off, his pursuit is at least delayed, and his force more closely examined.

§ 244. Upon hearing firing at the chain, the commander of the picket at once sends to learn the cause, and causes the picket to mount: if the enemy really attacks, the commander acts as directed above; but if the firing was only upon individuals, he at once sends word to the main guard and neighboring pickets, to prevent unnecessary alarm.

§ 245. The other pickets mount at once upon hearing firing at any part of the chain; and if the picket attacked retreats, they regulate their movements on it, so as to keep up the communication and not be cut off, and at once inform the next picket on the opposite side.

§ 246. After every skirmish the commanders of the pickets make an inspection to ascertain whether any of their men are captured or missing; if there are any such cases, they at once inform the commander of the main guard. Until the countersign is changed, the commanders of the pickets forbid the vedettes to allow any one to cross the chain, even with the old countersign; this they do in all cases when a man is missing from the vedettes or pickets, even if there has been no skirmish.

Article 4.

Duties of the commander of the main guard.

§ 247. The main guard is commanded by a field officer or captain; there must always be a trumpeter with him.

§ 248. He communicates to the commanders of the pickets the *parole*, *watchword*, and *countersign*.

§ 249. Having reached the position designated for the main guard, its commander details and sends forward the platoons that are to supply the pickets and vedettes. Having turned over the command of the main guard to the next in rank of those remaining with it, he goes himself

to the advanced chain, to superintend the posting of the pickets and vedettes; he gives all the parties their instructions, how they are to act upon the appearance of the enemy, and how in case of retreat; he carefully examines the ground. The main guard remains mounted until the vedettes and pickets are posted.

§ 250. If it is impossible for the commander of the main guard to be present at the original posting of the pickets and vedettes, he should at least ride over all the ground committed to his charge.

§ 251. If in any of the pickets one relief is short of men, the commander of the main guard supplies the deficiency from it; if a picket has more men than enough, he either directs the superfluous men to join the main guard, or sends them to reinforce another picket which has not men enough, or, finally, directs the picket which has the most men to occupy a greater portion of the chain than its neighbors.

Remark.—In these cases, it is absolutely necessary to bear in mind that the parties sent to the outposts must be units, so that their interior organization may not be disturbed; especially that two companies of the same regiment must furnish a main guard and the corresponding pickets and vedettes. From this there will result greater unity in the conduct of the outposts, and each officer, being with his own men, can assign them to the particular duty best suited to the character and capacity of each.

§ 252. In the disposition of the vedettes and pickets, the commander of the main guard should look to the connection of the whole chain and all the pickets under his charge, and particularly to the facility of communication with the neighboring main guards.

§ 253. Having returned to the main guard, its commander arranges it as follows: the guard dismounts; during the day one-half, by turns, unbit and feed their horses, holding them by the reins; the rest of the men remain with their horses, in perfect readiness, some 20 to 50 paces in front of those who are feeding. During the night all the horses must be bitted, and one-half the men perfectly ready to mount.

§ 254. Having arranged the main guard, its commander reports to the commander of the outposts his arrangements, and every thing of importance that he has observed.

Remark.—Sketching the ground occupied by the outposts is a part of the duty of the staff officers; but if there are none present, the commander of the main guard should annex to his report a rough pencil sketch of the ground, for the better elucidation of his arrangements.

§ 255. A sentinel is placed at the main guard, as at the picket, (§ 221;) he challenges all who approach in the same manner as the vedettes. All other precautions are observed by the main guard as by the pickets. (§ 226.)

§ 256. If it is necessary to cook in a covered place, and the commander of the outposts has given permission to use a fire, the men do not leave

their position to eat, but the food is brought to them, and they eat, a few at a time.

§ 257. The commander of the main guard receives the rounds in the same manner as the commander of a picket does. (§ 234.)

§ 258. If men without the countersign, flags of truce, or deserters from the enemy, are sent in from the pickets, the commander of the main guard interrogates them, and then sends them, under guard, to the reserve, if there is any, or direct to the commander of the outposts.

§ 259. Upon receiving from the pickets news of the approach of the enemy, or on hearing firing at the chain, the commander of the main guard at once sends an officer, or a sergeant, with two men, to ascertain what is taking place, and reports to the commander of the outposts. That part of the main guard whose horses are bitted mount and ride to the front to receive or support the retreating pickets in case of necessity; in the mean time the other portion prepare, and, if the firing continues, join the advanced party.

§ 260. If the commander of the main guard is satisfied that the enemy attacks really and decidedly, he reports again to the commander of the outposts, and acts according to the preceding instructions; that is, he either endeavors to resist the enemy and hold his ground, or keeps up the firing and retards his advance, or simply falls back upon the reserves.

§ 261. In the night, the main guard may, as in the case of a picket, (§ 243,) try an immediate attack; but this should be made by only a part of the main guard, holding the rest in reserve to support the attacking party.

§ 262. The commander of each main guard should constantly keep up his connection with his pickets and the nearest main guards by patrols; if the enemy advance, he must regulate his movements in conformity with those of the other main guards, so that, being as nearly as possible on the same line, they may be in a condition to render mutual assistance.

§ 263. The commander of a main guard should be very careful as to his reports; upon receiving any news about the enemy from the pickets, he should endeavor to verify it in person; if that is impracticable, it is best to send to the commander of the outposts the original report received from the picket.

§ 264. If the same two companies remain upon outpost duty for several days, the pickets are usually relieved every 24 hours. It is best to relieve them in the morning, that the new pickets may be able to see the country. If the two companies are detailed for 24 hours only, the pickets may be relieved during the day, especially if they have been alarmed and have not had time to unbit their horses. Such reliefs should be effected one or two hours before sunset, to give the new reliefs time enough to become acquainted with the ground.

ARTICLE 5.

The reserves of the outposts.

§ 265. These may be employed with two objects:

1. To facilitate the retreat of the outposts, if they are very distant from the camp; or,

2. To retard the advance of the enemy if the outposts are close in.

In the first case, the reserve need not be very strong; if the ground permits the action of cavalry, it is composed of that arm in preference; from two to four companies or more may be detailed for the service. In the second case, the composition of the reserve depends upon the ground and the length of time it is desired to detain the enemy; in localities at all favorable to infantry, the reserve is composed of that arm, and it is of cavalry only on perfectly open plains; in this last case, the deficiency in defensive strength is supplied by the addition of horse artillery.

§ 266. In general a reserve of the outposts is detailed only for the protection of a considerable body of troops, as, for instance, 3 or 4 divisions. For detachments consisting only of a division or so, there is no reserve of the outposts; the detachment itself constitutes the reserve.

§ 267. The bivouac of the reserve of the outposts is selected as near as possible to water, wood, straw, forage, &c.; but in no case should any military advantages be lost sight of, they being much more important in such a case than any considerations of mere convenience.

§ 268. An inlying picket, of from ¼ to ⅓ of the entire reserve, is detailed, which should be perfectly ready to mount, to support the outposts if necessary. The inlying picket is placed a little in advance of the rest, and acts as the guard of the artillery, if there is any; its men should wear their accoutrements, and have their horses constantly saddled and bitted.

§ 269. The rest of the horses are not unsaddled, but stand at the picket-ropes, or are hobbled, except the horses of the guns, which are fed in harness, and are unhitched only to go to water, and that by turns; the caisson-horses may be unhitched.

§ 270. The reserve always bivouacs in order of battle,—that is, with the companies in line; the guns ought to be in position, in full readiness for action, a little in advance. If the reserve is partly composed of infantry, the cavalry is so placed that the party standing to horse may be covered by the infantry.

§ 271. The arms should be loaded. The men change their dress, and unsaddle to examine their horses' backs, a few at a time; in a company by section, in a regiment by companies.

The men who are reposing may take off their shakos, but not their accoutrements.

§ 272. The use of fire is allowed, unless peculiar circumstances render it improper.

§ 273. The reserve secures itself by camp and quarter guards, posted as in time of peace. The duty in the reserve is performed as in ordinary bivouacs; guards and sentinels present arms as usual, but no signals by drum or trumpet are allowed.

§ 274. When the outposts take up their positions, if it becomes necessary to reinforce any of the main guards, or to establish new pickets, it is done from the reserve.

§ 275. The commander of the outposts is habitually with the reserve; therefore, all reports from the main guards and independent pickets are sent thither, that its movements may be regulated in conformity with the reports received.

§ 276. When the commander of the reserve receives a report of the approach of the enemy, he acts according to circumstances; that is, he either sends a reinforcement to the pickets, or advances to support them with the whole reserve, or joining them himself does every thing that is necessary or possible. It is the duty of the reserve to prevent the enemy from falling suddenly in force upon the main body, and to use every exertion to retard his advance, in order to afford the main body time to prepare to receive him, and take the measures necessary under the circumstances. The more vigorously the enemy attacks, the more stubbornly must the reserve resist him.

§ 277. The troops composing the reserve may relieve the main guards and independent pickets; this relief is effected once or twice in 24 hours. The reserve itself is relieved by the special order of the commander of the main body.

ARTICLE 6.

Independent pickets.

§ 278. If there is near the advanced chain any point the occupation of which is necessary or very advantageous,—for example, if it will strengthen a flank of the chain not sufficiently secured by the nature of the ground, if it commands an extensive view, or if the enemy must necessarily pass over it, and its distance is such that the chain cannot be extended to it without a considerable increase in the number of men,—then this point is occupied by a special detachment, called an *independent picket.*

§ 279. They are sent out from the nearest main guard, or from the reserve of the outposts, and are under the orders of the commander of the outposts. They are posted as the ordinary pickets, with the difference that their vedettes are solely for their own security, and are so placed as to prevent the enemy from attacking the picket unawares.

§ 280. Not having a direct connection with the other parties, they must maintain it by means of patrols, and should also send patrols in the direction of the enemy; therefore the strength of an independent picket will be determined by the indispensable number of vedettes and patrols to be furnished. For example, if it is necessary to post two pairs of vedettes and one sentinel at the picket, and to send out patrols on two roads leading towards the enemy, and on one towards the nearest picket, then, each patrol consisting of two men, there will be 11 men in each relief, or 33 privates in the whole picket.

§ 281. The greater the distance of an independent picket from the other parties of the outposts, the stronger should it be. In all cases it should have a secure retreat.

§ 282. It is the duty of independent, as of ordinary, pickets, to be always prudent, to watch the enemy, to obtain information of his nearest parties and distant movements; but as they are more exposed than the others to be attacked and cut off, they should redouble their vigilance and precautions.

ARTICLE 7.

The general duties of all parts of the outposts.

§ 283. Precaution and indefatigable vigilance are the first duties of all parts of the outposts. Independently of the security of the outposts themselves, this duty assumes a peculiar importance from the fact that upon its fulfilment depend the tranquillity, safety, and sometimes the existence of the troops guarded.

§ 284. If the positions of the outposts are not already occupied by our own troops, the parties detailed for outpost duty will march to their posts with all the usual military precautions; that is, with advanced, flank, and rear patrols. Besides this, it is well, upon approaching the ground, to send out small patrols in all directions, to examine the country and ascertain whether the enemy is concealed in the vicinity. It is safer not to commence posting the chain until the return of the patrols; at all events, not until they have occupied points whence they can see for a long distance in all directions.

§ 285. At the outposts it is necessary to preserve quietness, and to avoid every thing which might discover them to the enemy. For this reason the use of trumpet signals is forbidden, except in case of a skirmish; directions, orders, and challenges are given in a low tone; the use of fire is prohibited, except at the reserve, and is permitted there only when there is no particular reason for forbidding it.

§ 286. Every commander despatching a party for outpost duty under his orders must give its chief detailed instructions; he must satisfy himself that the instructions are fully understood, and must exercise the

greatest personal vigilance in watching over their execution by his subordinates.

§ 287. If it is impossible to carry out the instructions fully, the subordinate must at once report to his superior, explaining the cause of the impossibility.

§ 288. The gradation of subordination is as follows: the vedettes are immediately subordinate to the pickets from which they are detached; the pickets to their main guards, the main guards and independent pickets to the reserve of the outposts. The commander of the reserve is immediately subordinate to the commander of the outposts; the latter to the commander of the advanced guard.

§ 289. The commander of every post should at once report to his immediate superior, and, if necessary, to the commanders of the nearest parties, everything he has observed in person, or learned through his subordinates, especially what refers to the movements of the enemy.

§ 290. The subordinate should always endeavor to verify the information in person, and then make his report; always remembering that an unfounded report may produce serious consequences to the whole army.

§ 291. If it is impossible for him to verify the information in person, he should forward to his superior the original report received.

§ 292. Reports should be written clearly and with precision, especially with regard to the force of the enemy, noting not only his numbers, but of what arms, and the direction in which he marches. In reports positive facts should be distinguished from probabilities,—noting the degree of confidence to be reposed in the latter.

§ 293. If it is unnecessary to forward the original report received, it is preserved until, by the progress of events, it has lost all importance and significance.

§ 294. All reports to the commanders of main guards are of especial importance, and those to the commander of the outposts still more so. Every exaggerated or ill-founded report renders it necessary to turn out and fatigue the troops uselessly; on the contrary, contempt for the enemy, and tardiness in reporting, may not only compromise the one making the report, but even endanger the security of the army and place it in a precarious situation.

§ 295. It is the duty of every party of the outposts to preserve its connection and communication with the nearest corresponding parties, with those subordinate to it, and with that to which it is immediately subordinate.

§ 296. The commander of every post should carefully examine, in person, the ground in his vicinity, not only in reference to his relations with the nearest posts, but in regard to his movements if attacked. He must also find suitable watering-places.

§ 297. In case of an attack it is the duty of every party not only to reinforce and support the parties immediately subordinate to it, but also to assist the neighboring parties whenever it is necessary and possible. If a retreat is ordered, or forced upon them, each party rallies on that to which it is subordinate.

§ 298. In conformity with what has been said before, if firing at the chain is heard, the portions of the pickets and main guards ordered to be in constant readiness at once move forward, even if they have received no reports as to the advance of the enemy. In such cases, the reserve, although fully ready to meet the enemy, makes no movement, without orders, until the pickets and main guards are driven in.

§ 299. Upon an attack by the enemy, the commander of every party should regulate his movements in accordance with those of the nearest parties, so that he may not expose them to be cut off by a premature retreat on his part, or expose himself either by too tardy a retreat, or by moving to the front with unnecessary rapidity.

§ 300. It is the duty of all parties of the outposts and of all vedettes to hold their positions as long as possible. In the event of an attack they do not retreat without orders or pressing necessity; because, although there may be no difficulty in the retreat, and although the ground abandoned may easily be reoccupied, yet the enemy gains something of which we cannot deprive him,—that is, a knowledge of the ground, which may have been the only object of his attack.

§ 301. If any party is ordered to defend itself to the utmost, then, although the enemy is in superior force, they resist him on the spot, and, if necessary, unhesitatingly sacrifice themselves to the last man.

§ 302. The commanders of all the posts should see that their subordinates have betimes the *parole*, *watchword*, and *countersign*.

§ 303. The commanders of pickets allow all persons who know the *parole*, *watchword*, and *countersign* to cross the chain in any direction, both by day and night, without obstacle. Therefore, in time of war, the parole is not given to the men, but only to those persons whose duty renders it necessary for them to possess it, and they preserve it with the utmost secrecy.

§ 304. On this principle the parole is given only to the commanders of the main guards and pickets, and to those persons who are intrusted by the proper authorities with missions which render it necessary for them to cross the chain without detention.

The watchword is given only to the non-commissioned officers sent out with patrols and reliefs, and serves for mutual challenges.

The countersign is given to all on duty at the outposts, and serves to challenge all who approach the chain.

§ 305. Upon the arrival at any post of people who, by the regulations, or by special orders, are not to be allowed to pass, the commander of that

post sends them to his immediate chief. Upon the arrival of flags of truce he watches that they do not enter into conversation with any but the authorized persons.

§ 306. At the outposts arms are not presented, nor the men mounted, for any of the commanders. Upon the approach of a superior officer, the party on duty at once stand to horse, the commander of the post orders the rest to do the same, and places himself in that position; if the superior stops at the post, its commander reports what he has observed.

§ 307. Upon the approach of the commander of the advanced guard, or of the main body, to the position of the outposts, he is met and accompanied only by the commander of the outposts; the commander of each post remains with it.

§ 308. When a post is relieved, the old commander will explain to the new one every thing which is, in his opinion, of importance, and every thing that he has observed in reference to the enemy and the locality.

§ 309. If the commander of a party, newly placed on duty at the outposts, finds any thing wrong in the original arrangement of the vedettes, pickets, or main guards, he must report it, through his immediate chief, to the commander of the outposts, and ask his permission to rectify the dispositions; until he receives this permission, he preserves the former arrangement.

§ 310. The commanders of all posts watch over the punctual despatch of the reliefs of vedettes and posts sent out from their commands. It is best to relieve all the parties of the outposts before dawn; for the enemy can advantageously avail himself of the darkness to approach the chain, in order to attack at daybreak, and the presence of the reliefs at this time doubles the force of the outposts.

§ 311. The commanders especially see that the required rounds and patrols are sent at the proper times, never sending them at known hours or regular intervals; for, as they are sent to verify the exactness of the posts, it is best that they should be constantly expected.

Article 8.

Of the duties of the outposts in covering any march or change of position of the troops under their guard.

§ 312. If the troops, covered by the outposts, are ordered to make any movement, then to avoid a change of troops the parties who have formed the outposts constitute, if there is no special reason to the contrary, the advanced guard, if the march is to the front; the rear guard, if it is in retreat; in the latter case, it is the duty of the vedettes and pickets to cover the retreat of the rear guard.

§ 313. If the movement is to be concealed from the enemy, particular precautions are required on the part of the outposts.

They must redouble their vigilance, and take measures to insure that no one from the side of the enemy, neither patrols nor reconnoissances, penetrates our position; and they must manage these measures of precaution in such a way that the enemy may not observe what is going on among us, or that any thing extraordinary is being undertaken.

§ 314. Besides keeping all the posts perfectly ready for action, the means of effecting this consist in *not* sending more patrols than usual *in front* of the chain, but in sending them *behind* it as secretly and frequently as possible, to prevent the enemy's patrols from crossing it.

In addition, if it is necessary to place a party of troops near the chain, under cover, they should be in ambuscade, that they may attack the enemy unexpectedly if he endeavors to break through the chain.

§ 315. In these cases, the outposts are ordered to resist the enemy as obstinately as possible, not only to prevent him from penetrating within our lines, but to hinder him from seeing any thing. Sometimes, in order to distract the attention of the enemy, attacks are made upon his outposts during the retreat of our own troops. Such attacks promise greater success in the night than in the day, because when, on the alarm, the supports of the enemy's outposts approach the chain, they may thence perceive things that were imperceptible, even to the strongest vision, from their usual posts.

§ 316. If a retreat is to be effected secretly, it is best not to relieve the outposts by fresh troops before their retreat, because the sight of the new troops may excite the attention of the enemy; while, on the contrary, the sight of old troops and posts may tend to diminish his vigilance.

§ 317. Secret retreats are usually made at night, during which time it is endeavored to keep up the bivouac-fires, that the enemy may not observe the absence of the troops.

§ 318. To facilitate the retreat of the outposts themselves, should they be attacked during the night, certain measures of precaution are adopted. The officers should thoroughly acquaint themselves with the roads of retreat, placing several posts on the roads, for greater security, and especially at crossings of streams, on cross-roads, and in places where the roads diverge.

§ 319. A little before dawn, all the main guards are assembled and gradually retreat in the required direction; after them follow the pickets, and finally, at dawn, the whole chain commences its retreat, joining the pickets at a trot or gallop.

§ 320. With a certain, although small, extension of the line of outposts, it is impossible for them all to retire by one road without serious delay. Therefore there should, if possible, be designated for their retreat several roads which unite with the main road, even if at a great distance; if this is impossible, it is best to concentrate them rapidly on one point, in

order thus to form a detachment of sufficient strength to resist the attempts of the enemy.

§ 321. As a general rule, the moment when troops are breaking up their camp is the most favorable for the enemy to attack; it is, therefore, best to execute such things secretly, although there may be no other reason than this. If the means thus adopted are successful, the main body may sometimes accomplish the object of its movement before the enemy perceives its absence.

CHAPTER II.

THE ARRANGEMENTS OF THE OUTPOSTS AT A DISTANCE FROM THE ENEMY.

§ 322. If the enemy is so far from us that he cannot pass over the intervening space in a single march, and is, therefore, obliged to move by the roads, it will be sufficient to limit the operations of the outposts to watching the roads.

§ 323. In such cases it is only necessary to send out independent cavalry pickets on the roads leading towards the enemy; they communicate with each other by means of patrols.

§ 324. As far as regards obtaining information of the enemy, it is best to push out these pickets as far as possible, but, on the other hand, it is more dangerous for the pickets themselves; therefore they should not be pushed so far in advance as to be in great danger of being cut off.

§ 325. The distance to which they may be advanced will be increased in proportion to the number of roads occupied, the difficulty which the enemy must experience in moving secretly by each road, the distance to which patrols are sent out from each post, and the distance of the enemy from our position. It is necessary to be more cautious, and to draw in the pickets as the enemy approaches.

§ 326. The force of each independent picket must depend upon the number of vedettes and patrols it is to furnish, and upon the degree of strength it ought to possess.

§ 327. Every such picket is posted according to the rules laid down in §§ 220 and 221. The routine of duty and the measures of precaution are exactly as in ordinary pickets.

§ 328. As a general rule, they preserve their mutual communication by patrols; in addition, they send out patrols as far as possible towards the enemy, to obtain the earliest possible news of him.

§ 329. If they are far from the army, they must be supported by small

detachments placed in reserve at points where several roads unite, or at places whence it is easiest to afford prompt assistance to those pickets which may be expected to be attacked first.

§ 330. Intelligent irregular cavalry, *inured to war*, may be employed advantageously as independent pickets and patrols; but the supports must always be of the regular cavalry.

§ 331. Sometimes, even when at a great distance from the main body of the enemy, there may arise the necessity for the greatest precautions; for example, when the population is disposed to insurrection, or when the country is full of hostile partisans.

In such cases the precautions should be in proportion to the danger.

CHAPTER III.

OF VISITING THE OUTPOSTS.

§ 332. Small parties, consisting of a non-commissioned officer and two good men, are sent out by the pickets and main guards to ascertain whether the vedettes observe the proper vigilance and precaution. These parties are called *patrols*. Patrols also offer the advantage that they may happen to stumble upon the enemy stealing across the chain.

§ 333. The non-commissioned officer of the patrol must have the *watchword* and *countersign*.

§ 334. A patrol sent to visit the vedettes proceeds as follows: the non-commissioned officer has his sabre at a carry; the two men follow him with carbines advanced, or pistols drawn and cocked. They proceed to one flank of the chain belonging to their command; cross to the outside of the chain near the flank vedettes, and approach the chain silently from the outside to test the vigilance of the vedettes. When the vedette challenges, the non-commissioned officer replies, "*patrol*," and, at the command, "Advance, sergeant, with the countersign," advances to about 10 paces from the vedette, and gives the countersign in a low voice. The patrol then proceeds, in the same manner, to the first vedette of the next picket, or main guard, near which it recrosses to the interior of the chain, returns to its party, and reports whatever has been observed.

§ 335. If the non-commissioned officer finds the post of any pair of vedettes abandoned, he leaves one of his own men there, and sends in a man of the next pair to inform the commander of the picket.

§ 336. The patrol must carry back with it all persons found detained at the chain, and all met with without the countersign.

§ 337. If two patrols meet at night, and cannot recognize each other's faces, the one which first perceives the other cries, "*Halt! Who comes there?*" and, having received the reply, "*Patrol!*" cries, "*Advance, sergeant, with the countersign!*" the non-commissioned officer of the second patrol gives the countersign, and, in his turn, then demands the watch-word; if the replies are all correct, both patrols then proceed on their march, each having informed the other of any thing extraordinary observed or suspected.

§ 338. Upon suddenly meeting the enemy, patrols act as prescribed for vedettes.

§ 339. The number of patrols sent to visit the vedettes must be increased in proportion to the difficulty of seeing the vedettes from the pickets, the darkness of the night, the obstructions of the ground, the thinness of the chain, and the fatigue of the men, whether arising from a long march or a combat.

Under these circumstances, patrols are sent out continually, that is, on the return of one, another is at once sent out.

In the daytime, in clear weather, and in open country, but few patrols are despatched, though the vedettes must be kept in constant expectation of them.

§ 340. To inspect the pickets and main guards, the commander of the outposts sends out "*rounds*," from time to time.

§ 341. *Rounds* consist of an officer with two privates; all the main guards and pickets should be informed betimes what officers are ordered to make the rounds.

§ 342. The officer making the rounds must know the *parole*, *watchword*, and *countersign*.

§ 343. In reply to the challenge of the sentinel at the main guard or picket, the officer making the rounds answers, "*Rounds!*"

To receive the rounds, that part of the main guard or picket which is ordered to be in constant readiness mounts, without drawing sabre; those reposing are not disturbed. In other regards the rounds are received as in time of peace.

§ 344. The commander of the party visited reports to the rounds the number of men under his command, the arrangements of all his posts, the number of men absent on duty, the number present, and every thing that has been observed.

§ 345. After this the officer making the rounds examines the command, satisfies himself that they are in the required state of preparation, and verifies the general number of men. Then, if he has been ordered to test whether the whole command can be promptly in the saddle, he notifies the commander of the post, who at once orders all the men to mount.

§ 346. Every thing prescribed here should be done quietly, and all

orders be given in a low tone. After this the rounds proceed to the next post; but the officer may demand an escort from the party just inspected.

§ 347. The rounds are not limited to visiting the main guards and pickets, but may be required to visit the vedettes; in this case they act as prescribed for patrols sent for the same purpose.

§ 348. The rounds are not sent out at fixed hours; the hours of their visits depend upon the judgment of the commander of the outposts, and should be so regulated that the parties to be visited may not know when to expect them; they are sent out most frequently at night, and just before dawn.

§ 349. Upon the return of the rounds the officer reports to the commander of the outposts the condition in which he found affairs, and every thing he observed.

CHAPTER IV.

OF PATROLS.

§ 350. The duties of *patrols sent out by troops on the march* were described in Part I., Chapter II., Article 5.

In this chapter will be described the duties of *patrols sent out by troops in camp.*

§ 351. Besides the patrols sent out to visit the vedettes, (§§ 332 to 339,) patrols are sent out for other purposes, namely:

1. To keep up the communication between the different parties of the outposts.

2. To reconnoitre the enemy; and,

3. To examine the country.

§ 352. When a patrol is sent out to keep up the communication between different parties of the outposts, it rides to the post whither it is sent, reports to the commander whatever it was directed to communicate, and every thing observed on the way; having received his instructions, the patrol returns to its party.

§ 353. To insure the safety and tranquillity of the troops it is not sufficient for the outposts merely to watch the space visible from the chain, because the enemy may send out small parties to make partial attacks, in order to exhaust the troops by forcing them to assemble on continual alarms. To secure the outposts against such attacks, as well as to discover the enemy and examine the country, patrols are sent out in advance of the chain.

§ 354. Such patrols are divided into *near* and *distant patrols*; they are composed of light cavalry in preference.

§ 355. *Near patrols* consist of a non-commissioned officer with two or three prompt men, and are sent out by all parties of the outposts. They move on all the main roads leading towards the enemy, and do not go more than one or two miles from the vedettes, so that they may give prompt information of the approach of the enemy; they limit themselves to watching him. These patrols are sent out the more frequently in proportion as the enemy can approach more secretly; so that in an obstructed country, in thick fogs, dark nights, and close to the enemy, they are sent out continually,—that is, one immediately upon the return of another.

§ 356. *Distant patrols* are sent out to discover the enemy and examine the country at considerable distances, (from 2 to 10, and even more, miles,) and are composed of a greater number of men, (of 10, 20, 30, and more,) that they may sometimes be able to attack hostile patrols, and make prisoners. They are usually commanded by an officer, to whom are explained, in detail, the object of his mission, the means of accomplishing it, and the direction he is to take; he is also instructed whether to engage the enemy's patrols or to avoid a combat.

§ 357. Distant patrols sometimes consist of a company, or more, especially if they cannot return the same day. They are sent out by the advance guard or main body, and take the name of *flying detachments*. As a general rule, all distant patrols are under the orders of the commander of the outposts.

§ 358. The moment a patrol passes beyond the chain, it should detach front, flank, and rear patrollers, to secure itself against sudden attack. In figs. 4 and 5 are given examples of the arrangements of patrols of 15 and 30 men; larger patrols are arranged according to the same principles. Smaller patrols are arranged according to their strength: for example, a patrol of five men sends out one in front, and one on each side; a patrol of three men places one in front, the others move at a little distance apart,—one watching to the right, the other to the left.

§ 359. It is a great advantage for a patrol to see the enemy before being discovered itself; this renders it possible to avoid a stronger force, and to apprize the outposts of its approach, or to attack, by surprise, an equal or inferior force.

§ 360. In order to secure themselves against a sudden attack, patrols should use all possible precautions, and observe the deepest silence; the *patrollers* carry their pieces cocked. In the night, and in thick weather, all precautions are redoubled. The patrol should occasionally halt and listen; the men in front and on the flanks, dismounting by turns, place the ear to the ground, &c.

§ 361. On their return march the patrols should be even more cautious; because the enemy, having perceived them, may select this very time for the attack, on the supposition that the outposts, being relieved from apprehension by the return of the patrols, may somewhat relax their vigilance.

§ 362. The commander of a patrol should concert certain signals with his *patrollers* by which they are to indicate their discoveries. If the necessary precautions are observed, it is impossible for the enemy to attack unawares; therefore the commander of a patrol is always held responsible for its loss.

§ 363. In Part I., Chapter II., Article 5, are explained the precautions to be observed by patrols sent out by troops on the march; these measures are equally applicable in the present case, and the following are prescribed in addition:

§ 364. If a patrol leaves in its rear defiles by which it is intended to return, a few men should be left to hold them,—in preference, the men having the worst horses. If these men are driven off by a superior force, they can, by means of preconcerted signals, (such as rockets, lighted straw on poles, &c.,) inform the patrol of the fact, so that it may seek another line of retreat.

§ 365. As these patrols are usually intended merely to discover the enemy and examine the country, they should generally avoid a combat unless success seems certain.

§ 366. That he may be able to avoid the enemy when still unperceived by him, the commander of a patrol pays special attention to the ground, so that in case of necessity he may avail himself of its accidents for concealment.

§ 367. Upon meeting the enemy in superior force, the patrol should at once commence its retreat if already discovered.

§ 368. If a patrol suddenly stumbles upon the enemy in the night, it is best to attack at once; in the night the advantage is always on the side of those who attack first, for to the habitual disorder following a sudden attack is added the uncertainty as to the strength of the attacking party. In such cases, decision and the advantage of the initiative insure success. When the enemy is beaten off and retreats, he ought not to be pursued far, lest we fall into an ambuscade; and it is best, not being allured by success, to avail ourselves of it, and retreat in good order.

§ 369. The guides of patrols ought to be chosen for their thorough knowledge of the country and fidelity; but their suggestions should not be blindly followed: to verify them, constant inquiries should be made of the inhabitants, and of all persons met on the road; for greater security, the guides should be detained until the patrol is in perfect safety.

§ 370. To rest and feed the horses, the patrol avails itself of some

covered place off the road, as a forest, ravine, &c. During the halt, the patrol secures itself by means of vedettes, small patrols, and the precautions described for independent pickets. In these cases the use of fire is rigorously forbidden, no matter how well concealed the place may be. If any inhabitants are found on the spot, they must be detained until the patrol departs. During the winter, halts are made at isolated houses, or small hamlets, taking care that none of the inhabitants pass beyond the chain of sentinels established by the patrol.

§ 371. Patrols being in small force, in order to avoid the danger of being cut off, should never remain long in any one place.

§ 372. All patrols, especially those intended to examine the country, should, if possible, return by a different route from that by which they advanced; besides thus increasing their own security, they examine a greater space, and bring back information concerning two roads instead of one.

§ 373. It is very desirable that the commander of a patrol sent to examine the country should make sketches of the ground passed over, or at least describe in great detail all the objects met with of any importance in a military point of view, such as roads, rivers, forests, and defiles. Whether the roads are practicable for all kinds of troops; the nature of the road-bed; whither the roads lead; and whether they are the shortest. The extent of the forests; whether they are dense or open, marshy or dry. The size of the villages; whether they are situated on heights or in hollows; whether they contain churches and mills; whether a stream runs through them in one channel, or in several branches, or around them; whether the inhabitants have many cattle and much provisions. With regard to rivers, he observes their depth, fords, and bridges; whether the bottom is boggy or hard; the declivity and height of the banks; which bank is the higher, and where it is easiest to cross. As to marshes, he notes their extent; whether they are passable; whether there are dikes across them, and of what kind. In reference to defiles, he notes their length and breadth; describes the adjacent country, and whether the defiles can be turned. Where the commanders of patrols cannot go in person, they interrogate the inhabitants concerning these things, and compare the various replies received.

§ 374. Since special acquirements are necessary for the successful accomplishment of the object of these patrols, an officer of the staff is sent with each of them, or is placed in command.

§ 375. Sometimes patrols are sent out to alarm the enemy's outposts. These attempts usually succeed when the latter are very much scattered; for then, to repulse the attack, he collects his posts; but the patrol, having gained its object, that is, having alarmed the enemy, in the mean while retreats in safety.

§ 376. Such attacks are made in preference in the night, or in dark and bad weather. The patrol, concealing its weakness, should silently steal up to the enemy; for on this depends its success.

Having approached the outposts, it should rapidly, noisily, and with warm firing fall on them as foragers, create an alarm, seize, if possible, some of the vedettes or pickets, and then retreat rapidly before the enemy recovers.

§ 377. As a conclusion to the rules laid down in this chapter, it may be stated that the principal duties of the commander of a patrol are the following:

1. To be always cautious.
2. Always to provide for the security of his retreat.
3. Never to allow himself to be surrounded and captured.
4. To examine the country carefully, and remember its features.
5. To obtain all possible information from the inhabitants.
6. To understand how to select guides and how to treat them; and,
7. To endeavor to examine every thing in person.

§ 378. As for the rest, it is impossible to give the commander of a patrol instructions in sufficient detail to cover all the exceptional cases that may arise; therefore the success of his mission must depend chiefly upon his discretion and presence of mind.

Rashness, equally with cowardice, both here and everywhere, fails to secure the desired advantages.

CHAPTER V.

OF THE COMMAND OF THE OUTPOSTS.

§ 379. In order to secure unity in the arrangements and operations of the outposts, a field or general officer is detailed as the commander of the outposts; all the parties are under his command.

There is usually detailed for duty with him an officer of the staff, whose particular duty it is to prepare an accurate and rapid description of the ground.

§ 380. The commander of the outposts may either be detailed for a certain length of time, or be relieved at the same time with his troops; in the latter case, he is usually the senior officer of the troops detailed for outpost duty.

§ 381. Having received from the commander-in-chief, or the chief of staff, instructions as to their operations, the general direction and extent of the chain, information of the number of troops, and destination of the parties detailed for the service, he sees to the prompt occupation of

the places designated for the positions of the outposts,—making, in general, such modifications of the arrangement as may appear necessary.

§ 382. He receives every day from the commander-in-chief, in writing, and under an envelope, the *parole, watchword,* and *countersign;* he communicates these to the commanders of the main guards for the use of their posts.

§ 383. He gives the necessary instructions to the commanders of the main guards, pickets, and other posts, and maintains a constant watch over their punctuality and vigilance in the execution of their duty, and sees that they keep up the necessary connection with each other.

§ 384. He should be informed of every thing that happens at the chain; nothing should escape his attention with respect to the posts, and guarding the ground around them; it is his duty not only to correct, but anticipate, negligence, and to give all necessary directions.

§ 385. He makes the distribution of patrols, determining from what parties, by what roads, and how far they are to move; he despatches distant patrols, and gives to their commanders detailed and precise orders.

§ 386. He arranges the despatching of rounds to visit the outposts, and also goes around in person. He informs betimes the commanders of the main guards and pickets as to who will be sent on the rounds. The hours of sending out the rounds depend upon his judgment; usually they go out during the night and before dawn.

§ 387. Upon the arrival of flags of truce, deserters, or strangers, he acts according to the instructions received from the commander-in-chief, or chief of staff, to whom he ought to refer in all doubtful cases.

§ 388. The post of the commander of the outposts is with the reserve, whither all reports are sent from the outposts; but, if there is no reserve, he places himself with the main guard which is nearest the centre of the general position. In every case he notifies all the commanders where he will be, that they may know where to send their reports.

§ 389. But he so arranges matters that, if he is not found at the place designated, the report, no matter what it is, may be forwarded direct to the commander of the advanced guard, and also that this may in general be carried out in cases where the point from which the report originates is nearer to the commander of the advanced guard than to his own habitual position; but he takes care that he himself shall, in all cases, be promptly informed of every thing that occurs.

§ 390. The commander of the outposts, having received reliable reports from all his parties, regulates their operations in conformity with his instructions, and conducts their movements, either so as to repulse the attempts of the enemy, or to concentrate the parties, or to afford support to any of them, or, finally, to make a general retreat.

§ 391. He promptly reports to the commander-in-chief every thing

deserving attention that has been observed, and also sends him early reports of his intentions.

§ 392. Upon the arrival of the commander-in-chief at the outposts, their commander accompanies him over the whole position.

CHAPTER VI.

OF THE DUTIES OF HUNTERS, FRIENDLY INDIANS, ETC., AT THE OUTPOSTS.*

§ 393. Outpost service is performed by these kinds of troops rather differently from the manner pursued in the regular cavalry. Adopting for them the rules herein contained, and which can be explained to them by their chiefs, they may be advantageously employed in advance of the regular cavalry.

§ 394. The main difference is, that the advanced chain does not consist of double vedettes, relieved every two hours, but of pickets of 3 or 4 men each, on duty for 24 hours, and relieving each other in the task of watching the enemy.

§ 395. These pickets are placed at such a distance apart that they can see each other, or at least that the enemy cannot slip through without being seen by one or other of the pickets.

§ 396. In each picket one man, mounted, or on foot, with his horse bridled by his side, constantly watches the whole spaces committed to the picket; another remains behind him in full readiness to mount; but the others repose, feed their horses, lead them to water, and even go in search of forage.

§ 397. If the pickets are pushed very far in advance of the regular cavalry, lines of supports are placed behind them. These supports are placed in preference near roads, or points of special importance, where they may serve as points of assembly for the chain of pickets.

§ 398. The supports usually consist of from 6 to 12 men each. One of them, usually standing to horse, places himself in sight of the chain of pickets, also turning his attention to the ground on each side. Of the rest of the men a part hold themselves in readiness, while the others rest, feed and water their horses, and, if necessary, go for forage.

§ 399. The remainder of the companies, or the regiment on duty, usually form a reserve, about a mile in rear of the lines of supports, on the principal road, or behind the centre of the chain. A part of this

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* This chapter is taken from one in the Russian regulations, relating to the duty of Cossacks at the outposts.

reserve is held in readiness to mount, but the greater part repose, and even hobble or picket their horses.

§ 400. The quick sight, activity, and vigilance of the men, referred to in this chapter, are such as to allow a greater interval between these pickets than between the pairs of ordinary vedettes. The supports, not being intended to relieve the chain, but merely to serve as rallying-points, may also be placed farther apart than the pickets of regular cavalry. Finally, instead of main guards, there is in this case but one main reserve. From these facts it would appear that reliable men, of the kind alluded to here, may guard a given space with a smaller number of men, and less fatigue, than regular cavalry. Reserves of light cavalry should be posted on a line with the main reserve of the irregulars. The Indian horses being peculiarly capable of enduring the fatigue of outpost duty, the friendly Indians, if there are any present, should compose the outposts in preference.

§ 401. During the night and in dark weather the intervals between the irregular pickets must be decreased, as prescribed for vedettes.

§ 402. Regular patrols and rounds need not be so much resorted to, but each particular chief should often ride around the whole circuit of his command.

§ 403. The irregular reserve will from time to time send out patrols of 5, 10, or 15 men to reconnoitre in all directions.

CHAPTER VII.

OF THE ARRANGEMENT OF THE OUTPOSTS ACCORDING TO THE NATURE OF THE GROUND.

§ 404. The art of arranging the outposts according to the nature of the ground is founded upon: 1. The proper general direction of the advanced chain; 2. The distribution of the supports; and, 3. The composition of the supports. The object to be gained is to discover the enemy at the greatest possible distance with the smallest possible number of men, without exposing any of the posts to be cut off.

§ 405. The general line of the outposts is generally determined by some natural objects, such as the banks of rivers, creeks, borders of ravines, marshes, skirts of woods, crests of heights, &c.

§ 406. The chain of vedettes should cross objects favoring the view of the surrounding country, and its flanks should rest on impracticable places. It should be neither too far advanced nor too close in: in the first case, it would be difficult for the vedettes to retreat; in the last case, the troops guarded would not have the necessary time given them.

§ 407. The chain should not be so placed as to have close in front of it covered places, villages, woods, and such objects; if it is not possible to throw the chain in advance of these places without too great an extension, it is best to draw it a great deal to the rear. If this last cannot be done, for want of space, it only remains to redouble vigilance and send out more frequent patrols.

§ 408. If the chain is placed behind an impassable object, such as a broad river or a very bad marsh, it may be made thinner than usual, or even be entirely dispensed with; in the latter case, patrols must be sent out, more or less frequently, in proportion to the degree of impracticability of the ground and the difficulty of examining it. In no case should any portion of the ground remain entirely unwatched, however impracticable it may appear to be.

§ 409. In mountainous regions, where the broken nature of the country embarrasses communications and facilitates the concealment of the enemy's movements on all sides, the outposts draw nearer together than the specified normal distances, and sometimes the camp is entirely surrounded by a chain of vedettes.

§ 410. In the general line of the outposts there may be places unfit for the operations of cavalry; such portions are necessarily occupied by infantry, all the rest by cavalry: in such cases, one part of the chain will consist of mounted vedettes, the rest of pairs of infantry sentinels. In this case, the outposts are formed of cavalry and infantry, each guarding the ground destined for it according to the rules laid down for that arm; but such a chain of outposts should form one general whole, and the different parts must maintain a constant union, unless separated by wholly impassable obstacles.

§ 411. The vedettes should be posted at the points commanding the most distant views; in the day they are placed on the summits of the hills, at night they fall back to the foot of the slope. They should also be concealed by some natural object, which, at the same time, permits them to see all around. Between the pairs of vedettes there should be no covered places which might conceal the approach of the enemy.

§ 412. In the distribution of the supports of the chain, that is, the pickets, main guards, and reserves, they are posted in preference at places around which the enemy cannot pass, or, at least, at places where he may most probably be expected; therefore, they are usually posted near the roads, especially at cross-roads.

§ 413. Another condition in the distribution of the supports is that each should, if possible, see the parties directly subordinate to it, and to which it ought to give immediate support. This is particularly important for the pickets in relation to the vedettes, because on the approach of the enemy the latter form part of the former.

§ 414. A third condition for the proper distribution of the supports is that they should be concealed until the moment for action arrives.

§ 415. Finally, a fourth condition is that they should be placed in positions suitable for their operations; that is, cavalry should have an open unobstructed space in their front, but infantry, an obstructed country. This condition is of peculiar importance in regard to the reserve, which is expected to make a more obstinate resistance than the main guard and pickets.

§ 416. In order to preserve the general union between all parts of the outposts, and more especially between the outposts and the troops guarded by them, there should be no impassable obstacles between them; this is to avoid exposing any party to being cut off and defeated separately. If there is behind the chain of vedettes a place across which communication is difficult, it is best to place the main guards or pickets near it, that they may hold the crossings, and permit the fulfilment of the other conditions for a good arrangement.

§ 417. Pickets relieving vedettes should always be composed of the same kind of troops as their vedettes; the main guards and reserves are composed according to the nature of the ground between the pickets and the camp; in places suitable for cavalry they consist of that arm, in defensive positions they are of infantry.

§ 418. To secure their greater independence, the reserves of the outposts may sometimes be composed of all three arms; but in an open, unobstructed country they may be of cavalry and horse artillery alone.

§ 419. *Example of the arrangement of outposts composed of cavalry alone.* (Fig. 8.)

It is supposed that an advanced guard, consisting of a brigade of cavalry and a division of infantry, is in the village A, and that it is necessary to guard it against the enemy, expected by the roads B.

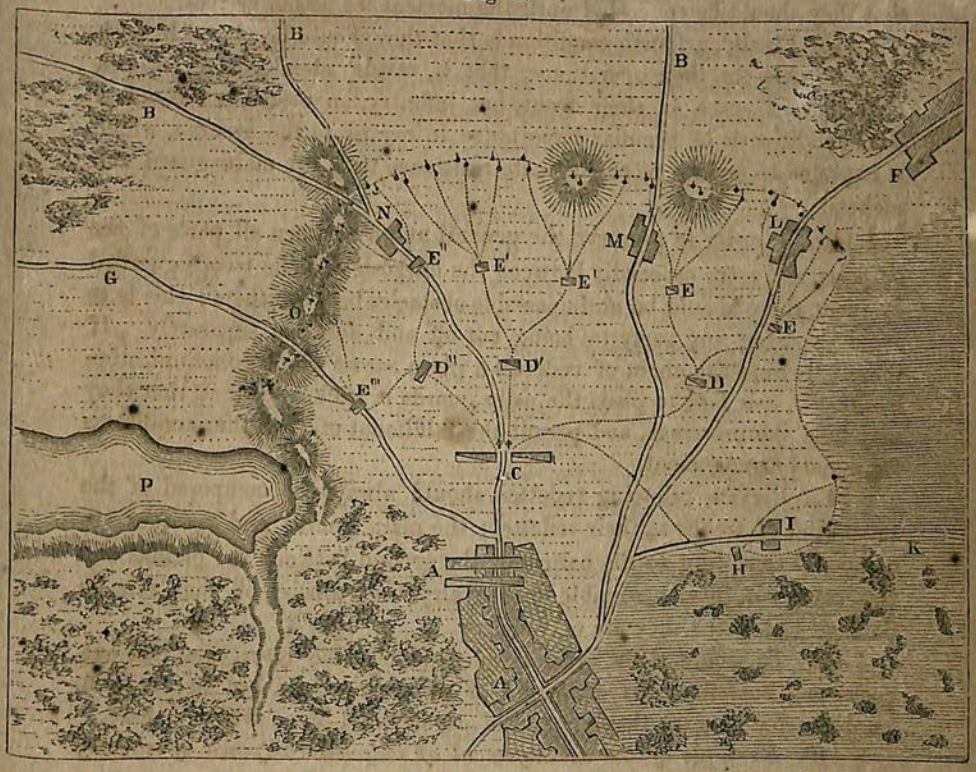
§ 420. To determine the line of observation to be occupied by the outposts, the whole ground between the position of the advanced guard and the points accessible by the enemy must first be carefully examined on the map; from the selection of the line of observation results the composition of the chain and its supports.

§ 421. In this example, according to the conditions already mentioned, the most advantageous line of observation is that proceeding from the village L, through the villages M and N, thence following the ridge O to the lake P. This line is favorable, because:

1. The right flank, resting on the marsh near the village L, cannot be turned, and requires no further extension.

2. The left flank, resting on the lake, allows us to observe from the ridge the distant movements of the enemy; the ridge also conceals our own movements from the enemy in that direction.

Fig. 8.



The advanced guard A, composed of a brigade of cavalry and a division of infantry, is in the village A; and it is necessary to post outposts to guard it against the enemy, expected by the roads B; 10 companies of cavalry and 2 pieces of horse artillery are detailed for the outposts and reserve. C is the reserve, consisting of 4 companies and 2 guns. D, D′, and D″ are the main guards, consisting of one company each. E, E, E′, E′, E″, E‴, are the pickets, of a platoon each. H is an independent picket, of one platoon, observing the road K.

Infantry.

Cavalry.

Cavalry vedettes.

1 1/2 0 1 2 5

Scale of miles.

3. Without being too far off, the chain is at such a distance that every movement of the enemy can be discovered in season to enable the advanced guard to take all its measures for operating against him.

§ 422. Upon the nature of the ground over which the line of observation extends must depend the kind of troops who are to hold it.

In this example, from the appearance of the ground towards the enemy and towards the advanced guard, it seems that cavalry can act with advantage; therefore all the outposts are of that arm.

The extent of the line is a little more than 5 miles: therefore, according to the estimate in § 193, 6 companies will be required for the vedettes, pickets, and main guards. As the ground opposes no obstacles to the action of cavalry, the reserve should also be of that arm. This reserve, consisting of 4 companies of cavalry and 2 pieces of horse artillery, is posted at the central point C, whence it can easily move to all parts of the outposts.

§ 423. In accordance with the principles just explained, the commander of the advanced guard issues in this case instructions to the following purport:

1. The Nth regiment of cavalry and 2 pieces of the Nth battery of horse artillery are detailed for outpost duty. These troops will post a chain of vedettes from the village L, through the villages M and N, and along the ridge O to the lake P.

2. Patrols will be sent out: from the village L to F; from the picket E‴, along the road G; and from the other posts, in the direction in which the enemy is expected.

3. If the enemy attacks in force, the outposts will fall back upon the advanced guard.

With these instructions as a basis, the commander of the outposts makes his assignments; each company is directed where to take position, and between what points to occupy the line of observation; all the parties are posted as explained above and shown in Fig. 8.

§ 424. If, in the example given in Fig. 8, the right flank of the advanced guard is not regarded as sufficiently protected by the marsh, then an independent picket, consisting of a platoon, is posted at H, to watch the road leading through the village I; this picket posts two pairs of vedettes.

§ 425. *Example of the arrangement of outposts composed of both cavalry and infantry.* (Fig. 9.)

It is supposed that the advanced guard A, consisting of a brigade of cavalry and a division of infantry, is placed behind the village B, and that outposts are to be posted to guard against an attack by the enemy arriving from the direction of the village C.

§ 426. With this arrangement of the advanced guard, it is best to place

Fig. 9.

The advanced guard A, consisting of a brigade of cavalry and a division of infantry, is placed behind the village B, and outposts are to be posted to guard against an attack by the enemy arriving from the direction of the village C; 4 companies of cavalry, 2 regiments of infantry, and 2 pieces of foot artillery are detailed to furnish the outposts and reserve.

D is the reserve, consisting of 1½ companies of cavalry, 11 companies of infantry, and 2 pieces of foot artillery.

E is a main guard of 3 companies of infantry, which furnishes the two pickets F, each of which posts 5 pairs of sentinels.

E′ is an infantry main guard of 2 companies, which supports the two cavalry pickets H, each of which consists of a platoon and posts 3 pairs of vedettes. E″ is an infantry main guard of 2 companies, to support the cavalry picket H′, which posts 4 vedettes, and H ′, which posts 1 vedette. E‴ is an infantry main guard of 2 companies, which holds the cemetery and supports the cavalry picket H‴, posting 3 vedettes.

Infantry. Cavalry.

0 ½ 1 2 Scale of miles.

the outposts on the left side of the creek M, because if the line of posts were limited by the stream it would be difficult to obtain information of the movements of the enemy's advanced guard.

§ 427. The best line of observation is from the lake N to the corner of the village B, then along the edge of this village to the marsh Q. On account of its shortness and the nature of the objects on which its flanks rest, this line is very advantageous. From the lake N to the village B (about 1½ mile) it may be held by cavalry; along the edge of the village, (about ⅔ of a mile,) by infantry.

§ 428. To prevent the line from being turned, independent pickets must in this case be posted on the left flank, near the lake N and the height O, on the right flank on the road L; to support the pickets and defend the villages and crossings, it is best that all the main guards should be of infantry.

§ 429. Thus the line will consist of 2 cavalry and 2 infantry pickets, holding the main line of observation, of 3 independent cavalry pickets, and of 4 infantry main guards. To supply these, 5 platoons of cavalry and about 9 companies of infantry will be necessary; so that for the whole outpost service, including the reserve, there may be detailed 4 companies of cavalry, 2 battalions of infantry, and 2 pieces of foot artillery.

§ 430. On this basis the commander of the outposts receives the following instructions:

1. Four companies of the Nth regiment of cavalry, the Mth and Nth regiments of infantry, and 2 pieces of the Nth foot battery are detailed for the outposts.

2. The cavalry will occupy the line of the outposts from the lake N, along the ravine P, to the corner of the village B; the infantry, from this last point, along the edge of the village to the marsh Q.

One independent cavalry picket will be posted near the village R, another in front of the village I, a third on the road L.

3. The main guards will be of infantry, posted as follows: one, of 2 companies, in the cemetery near the end of the village B; another, of 3 companies, in that village; a third, of 2 companies, in the village G; a fourth, of 2 companies, in the village I.

4. The rest of the troops detailed will form the reserve of the outposts, and be posted at D, on the main road, behind the crossing over the stream M.

5. As long as the enemy does not show a strong force of infantry, every effort will be made to keep him beyond the villages.

Under the foregoing instructions the outposts may be arranged as shown in Fig. 9.

§ 431. Finally, among the examples of the disposition of outposts

according to the ground may be considered the case of a locality which permits the enemy to approach only by a few passes. If he is separated from us by a river, a marsh, rough hills, &c., and can approach only by known fords, passages, or narrow defiles, then, if these points are occupied by independent pickets, there will be no necessity for a continuous chain of vedettes.

Remark.—Whenever the camp is behind a river, the outposts should convey to their own side all the boats and other means of crossing.

§ 432. In such cases, the independent pickets are posted at points which the enemy cannot turn.

§ 433. For their own safety, they post vedettes; if the ground permits, they communicate with each other by means of patrols.

§ 434. If it is necessary to support the independent pickets, reserves are placed as directed in § 412.

§ 435. *Example of the arrangement of the outposts in a locality where the enemy can approach only by a few passes.* (Fig. 10.)

It is supposed that a detachment, composed of a brigade of cavalry, and a division of infantry, is placed at the village A to guard, in connection with another detachment at B, the troops following from the north, and that outposts are to be posted; and that it is known that the advanced troops of the enemy, approaching from the south, have not yet occupied the village N, and that they cannot turn the passages over the stream P.

§ 436. It is evident that it is unnecessary, in this case, to post a continuous chain of vedettes, and that it will be sufficient to place independent pickets on the main roads, at proper distances from the advanced detachment to be supported by it, and keep up the communication with the detachment at B.

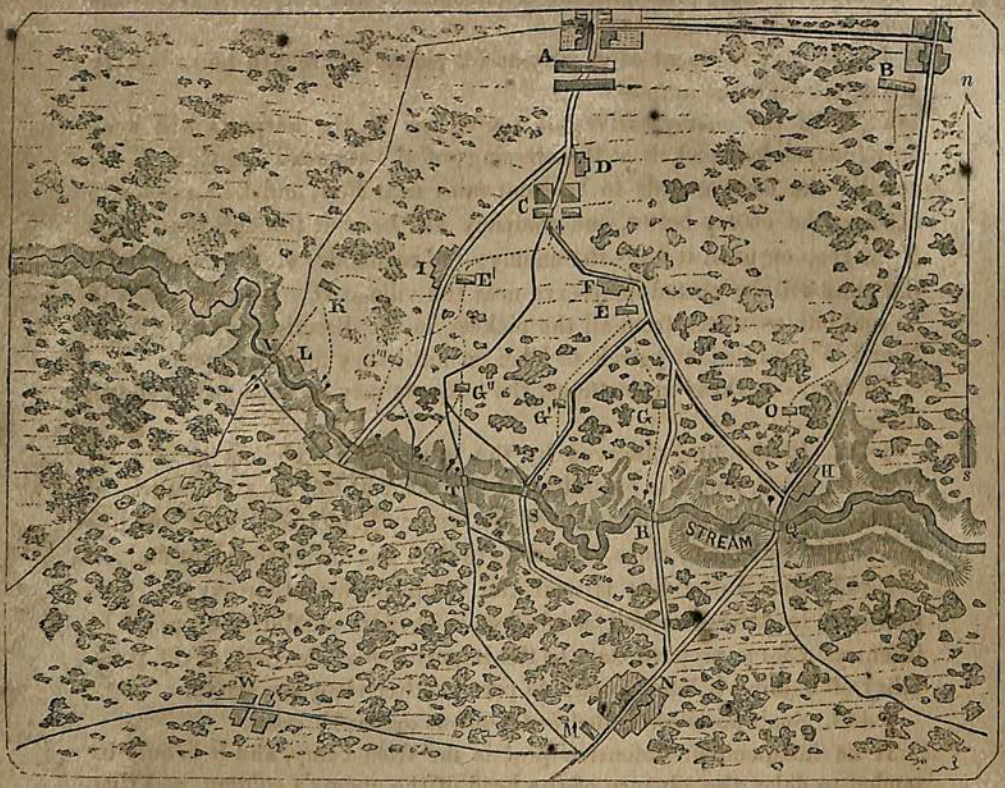
§ 437. Upon examining the ground in front of A and B, it is evident that the stream P is the most advantageous line of observation, and that the main detachment will be perfectly secure if the crossings of the stream are occupied by independent pickets.

§ 438. The crossings are at the points Q, R, S, T, U, and V. Supposing the crossing at Q to be occupied by a picket from the detachment at B, and that each picket consists of a platoon, the detachment at A must furnish 5 platoons, or 6 if the flank picket at K consists of a company.

§ 439. Main guards, consisting of a company each, are posted near the villages F and I; and there may be a reserve of 4 or 5 companies and a few guns at the village D.

§ 440. The pickets posted near R, S, and T, should send out patrols to the village N, and the pickets near U and V send patrols to the village W; a small detachment should be sent through the village N, to keep on until it finds the enemy; this should be composed of a company.

Fig. 10.



The enemy is beyond the village N; our own detachments occupy A and B; the force at A consists of a brigade of cavalry and a division of infantry; 10 companies of cavalry and two pieces of horse artillery are detailed from A to furnish the outposts and reserve. C is the reserve, consisting of 5 companies and 2 guns. E is a main guard of 1 company, supporting the pickets G and G′, each of which posts a vedette at the crossings R and S respectively. E′ is a main guard of 1 company, supporting the pickets G″, which post one vedette at T and one at a crossing above, and G‴, which posts a vedette at V. The pickets G, G′, G″, G‴, each consist of a platoon. K is a picket, consisting of a company which posts two vedettes near the village L, and patrols the road beyond.

M is a distant patrol, of one company, detached from the reserve to find the enemy. O is a picket belonging to the detachment B, which posts a vedette at the crossing Q.

§ 441. On these principles the commander of the outposts receives the following instructions:

1. The Nth regiment of cavalry and 2 pieces of the Nth horse battery are detailed for the outposts.

2. Until the enemy arrives at the village N, the outposts will keep only independent pickets at the crossings of the stream P, at R, S, T, U, and V; the main guards to be companies near F, I, and L; in order to observe the enemy better, one company will be sent through the village N, to keep on until it finds the enemy; the remainder of the cavalry and the guns will be posted in reserve near the village D. Near patrols will be sent out, as usual, from all the pickets, in the direction of the villages N and W, and distant patrols to keep on until they find the enemy.

To carry out these instructions, the outposts may be arranged as shown in fig. 10.

§ 442. If the line observed by the independent pickets is very far from the camp, and it is not intended to defend it, but they are restricted to observation and giving notice of the enemy's approach, then this line is occupied by cavalry alone, according to the rules for independent pickets.

§ 443. But if the line is near the camp, or for other reasons it is necessary to defend as well as observe it, then it should be occupied by infantry in force proportionate to the importance of the case, or the possibility of holding it long enough to permit other troops to arrive.

§ 444. Such posts are called *independent defensive posts.*

If an independent defensive post is far from camp, and it is only intended to delay the advance of the head of the enemy's column, and then fall back on the other troops, cavalry should occupy it in preference.

§ 445. In such cases mounted riflemen are of great use, because they repulse the enemy by acting as infantry, and can retreat with the rapidity of cavalry when it becomes necessary; and, when covering the retreat of other troops, they can act sometimes as infantry, sometimes as cavalry, according to the nature of the ground and the necessity of the case.

§ 446. In an independent defensive post, the party on duty dismounts and occupies the point to be defended as infantry; the rest of the men repose near the horses, observing the precautions prescribed for main guards; they are placed in rear of the men acting as infantry, and keep the horses bitted.

§ 447. In all the cases mentioned in this chapter, precise instructions are given to the commander of each party as to what is to be done in the event of the appearance of the enemy.

§ 448. As a conclusion to this chapter, it may be stated that, although the disposition of the outposts, according to the nature of the ground, is of the utmost importance, for the reason that success in watching the enemy depends neither on the number nor strength of the outposts, but

on their skilful arrangement, all that can be said on the subject is limited rather to an explanation of the general importance of objects than to laying down any precise rules. In all cases theory must yield to the judgment of the commander, for a blind and unconditional following of rules may result in injury rather than advantage.

From all that precedes, it appears that troops may be guarded either by continuous chains with lines of supports, or by independent posts, or by patrols, or, finally, by all three methods combined.

But there is no doubt that, if we carefully conform to the principles laid down for each of these arrangements, one of them will often suffice; while, on the contrary, if we neglect these principles, the employment of all three may be insufficient.

CHAPTER VIII.

PRECAUTIONS TO BE OBSERVED IN THE CAMP OF THE MAIN BODY.

§ 449. To avoid fatiguing the troops by keeping all of them constantly ready for a movement and combat, but at the same time to secure them against attack, and be able to afford prompt assistance to the outposts, a portion of the main body is detailed as an *inlying picket.*

§ 450. The inlying picket must always be ready for action on the first order or signal. The men should therefore always be to the front, and be dressed both by day and night; their arms should be loaded, and their horses saddled but unbitted and picketed; they are taken to water by turns, in parties. In the artillery, the men of the inlying picket are always dressed, the horses have their collars on, and are taken to water only by piece or by section.

§ 451. It rests with the commander of the main body, according to the news he has of the enemy, whether to direct additional precautions on the part of the inlying picket; for instance, that the men should wear their accoutrements, &c.

§ 452. The strength of the inlying picket is regulated by the commander of the detachment, or army, in conformity with the degree of danger, the proximity of the enemy, and his means of turning our position. Approximately, the inlying picket is $\frac{1}{5}$ or $\frac{1}{6}$ of the whole force.

§ 453. In small detachments from which it is impossible to send out many men on outpost duty, and in general near the enemy, the whole detachment sometimes forms a kind of inlying picket; in this case only a small number are relieved at a time, according to the judgment of the commander, but the greater portion remain in readiness for action.

§ 454. Upon receiving from the outposts news of the approach of the enemy, the inlying picket at once moves to the front to receive the outposts and afford the other troops time to prepare.

§ 455. For greater security, the inlying picket is sometimes posted a little to the front, and then picket their horses somewhat in advance of the general camp. This is done whenever there is any thing immediately in front of the camp to cause delay.

§ 456. The commander and all the officers of the inlying picket will strictly superintend the observation of all the precautions required.

§ 457. To prevent confusion in the camp in case of an alarm or an attack, it is necessary to watch—

1. That all parts of the troops are arranged in conformity with the movements they are to make, so that they can form in order of battle without confusion, and without crossing each other's paths.

2. That all commanders, down to those of regiments and batteries, inclusive, know the places their commands are to occupy in the general order of battle, if it is determined to accept battle at or near the camp.

3. That all impediments to the free communications and movements of the troops are removed in season as far as practicable.

4. That the commander of the train is always informed whither to direct it, in case of leaving camp suddenly.

5. That the parties of troops, from whom mixed detachments are sent out for forage and other necessaries, are formed immediately after their departure, to count and organize those remaining.

§ 458. The commander of the main body should be well informed in regard to all the country in the vicinity of his position, and especially as to the roads and crossings of streams in the direction in which he expects to move.

§ 459. In camps of the main body, the inlying picket posts camp and quarter guards immediately after reaching camp; this is done as in time of peace.

§ 460. It is the duty of the sentinels of the camp and quarter guards to see that no one leaves camp between evening twilight and reveille without a special permit from the commander, unless on duty.

Men who are not known, and do not belong to the troops, or who have not the necessary permission, are allowed to leave camp neither by day nor night, but are stopped by the sentinels and sent to the guards, by whom they are sent to the inlying picket.

§ 461. In the night the sentinels of the camp and quarter guards challenge all who approach from the exterior, and act as prescribed for vedettes.

§ 462. In general, all the rules laid down for camp and garrison service in time of peace are carried out as far as possible in the camps of the main body.

CHAPTER IX.

PRECAUTIONS TO BE OBSERVED FOR THE SECURITY OF CANTONMENTS.

ARTICLE 1.

Of advanced detachments.

§ 463. Troops in cantonments being scattered over a great space, and requiring much time to assemble, are not covered by a continuous chain of outposts. In this case, the arrangements for the early discovery of the approach of the enemy are made entirely by the cavalry, who must, by means of their outposts, patrols, and parties, watch the whole space in front of the cantonments towards the enemy.

§ 464. These outposts consist entirely of independent posts, whose arrangement depends altogether upon circumstances. It can only be said that, as they are sent out to discover the enemy, they are posted in preference on the main roads, at the junctions of roads on which the enemy must move, and in places favorable to defensive operations. If there is any place on the flank of the cantonments offering advantages to the enemy, it must be occupied.

§ 465. The posts should be strong in proportion to the importance of the road on which they are placed, their distance from the cantonments, and the facility for defence offered by the ground.

§ 466. The precautions to be observed by these posts have a twofold object: (*a*) their own safety; (*b*) to afford timely information of the approach of the enemy. In this matter they conform to what is prescribed in Part II., Chapter I., Article 6, of these regulations.

§ 467. The more extensive the space over which the outposts are scattered, the more are they left to their own resources, and the more must their success depend upon the good sense of the commander of each party. His only means of obtaining news of the enemy are his own eyes, sentinels, vedettes, patrols, and information from travellers and the inhabitants; but it depends upon his own sagacity to apply them with the greatest success.

§ 468. To support the independent pickets, there may be sent out main guards, and on the most important points of all the roads leading towards the enemy *main advanced detachments.*

§ 469. These last, being intended not only to support the cavalry outposts and parties, but also to check the enemy long enough to enable the troops in the cantonments to assemble at the designated rendezvous, should

possess a certain independent strength; therefore they should consist of all three arms, according to the importance of the point.

§ 470. These detachments are pushed one or two marches from the cantonments, and occupy strong positions, which they may sometimes strengthen by field works.

§ 471. If the intervals between them are considerable, smaller posts are placed between them, to keep up the communication and secure the cantonments from being alarmed by light detachments of the enemy.

§ 472. The commander of a main advanced detachment must make himself well acquainted with the country in the vicinity, examine all the approaches by which the enemy may arrive, and take all measures to discover his movements betimes, as well as to secure the best possible defence of the post.

§ 473. All the outposts are subordinate to the commander of the main advanced detachment; he arranges their movements, and receives from them all news of the enemy.

§ 474. The main advanced detachments post camp and quarter guards. All the men should be in readiness for action; therefore the horses are saddled at the picket-ropes, arms loaded, accoutrements close at hand, and they do not undress at night; their inlying pickets keep their horses bridled and accoutrements on. The guns in position should be loaded, artillery horses with their collars on, the detachments close to their pieces.

§ 475. All the posts mentioned in this article guard themselves by the various dispositions for outpost service; that is to say, they detach independent posts or surround themselves by chains, according to their distance from the enemy. They send out patrols and flying detachments as far as the position of the enemy, and also patrols to keep up their communication with each other and with the cantonments.

§ 476. In order to embarrass and retard his approach, preparations are made betimes to take up the bridges, destroy the causeways, &c., in the direction of the enemy, so that the advanced parties may accomplish the purpose immediately upon their retreat across them. But the communications with the cantonments should be perfectly open; therefore all obstacles should be removed betimes.

§ 477. If the commander of a main advanced detachment receives news of the enemy, he at once reports it to the commander-in-chief, and, if necessary, to the commanders of the nearest posts and detachments. In such cases it is necessary to be unusually circumspect with regard to reports; and in case of the appearance of the enemy, to endeavor to ascertain his force and designs, in order to avoid alarming the cantonments without cause.

§ 478. That the commander-in-chief may be constantly informed of

what is going on at the outposts, the commanders of the main advanced detachments send reports to him at the hours he may specify, several times a day, even if nothing of importance has been observed.

§ 479. Signal stations, telegraphs, &c., are established at convenient points to convey prompt information of the approach of the enemy.

§ 480. If a main advanced detachment is attacked, its movements must depend upon the orders it has received from the commander-in-chief.

§ 481. Only their wagons of the 1st class, with a part of those of the 2d, are with the main advanced detachments.

If the enemy advances, the wagons at once move to the rear, so as not to impede the movements of the troops if they are forced to retreat.

§ 482. On account of the fatiguing nature of the outpost duty, the troops should be relieved from time to time, according to the judgment of the commander-in-chief.

Article 2.

Precautions to be observed by the main body in cantonments.

§ 483. In addition to the outposts and advanced detachments for guarding the cantonments, certain measures of precaution are taken by the main body itself, especially in reference to the rapid assembly of the troops in the event of an attack. These measures are regulated by the commander-in-chief, according to the proximity of the enemy and the degree of the danger.

§ 484. The troops nearest the enemy, being most exposed to attack, are placed in crowded quarters to secure a prompt assembly; the others may be placed farther apart and in more roomy quarters, for the greater facility of obtaining supplies.

§ 485. In the distribution of the troops, their position in the cantonments must correspond, as nearly as possible, with their position in the order of battle. The artillery is placed near the points where it is destined to act, the men and horses being in the same villages with the parks.

§ 486. If it is necessary, inlying pickets are detailed in the villages nearest the enemy; the state of preparation in which they are kept is regulated by the commander-in-chief according to circumstances. If necessary, distant patrols are sent out by these inlying pickets.

§ 487. In addition to the guards at regimental head-quarters, and in the different parts of large villages, infantry guards are posted at the outlets of the villages on the side of the enemy. These guards post sentinels, and are ordered to prevent the passage of people without the countersign at night, or both by day and night, according to circumstances.

§ 488. Signal stations and telegraphs must be arranged in the cantonments. The signals to turn out and form must be explained to the troops.

§ 489. That the troops may meet the enemy in force if he attacks, points of rendezvous must be designated near the quarters for regiments, divisions, and other parties.

§ 490. In addition to the general rendezvous, there is a special one for the troops in each village. This is chosen outside of the village, on the side nearest the general rendezvous; and measures are taken betimes that all the roads leading to the rendezvous may be open and free from obstacles.

§ 491. When the troops march to the rendezvous, only the wagons of the 1st class accompany them; special rendezvous are given for the other wagons, so that the troops may not be delayed or embarrassed by them either when moving to the rendezvous or in case of retreat.

§ 492. For the march of the troops to the rendezvous, roads are chosen for each party, so that they may neither cross nor delay each other on the march.

The roads should be examined and repaired betimes.

PART III.

OF THE PRINCIPAL OPERATIONS OF SPECIAL DETACHMENTS.

CHAPTER I.

OF SUDDEN ATTACKS UPON THE ENEMY.

§ 493. Sudden attacks upon the enemy are made with several objects:

1. To alarm his posts;
2. To capture one or more of them; and,
3. To attack his quarters.

§ 494. For all such enterprises, cavalry are chosen in preference. Mounted rifles, or dragoons, uniting the defensive force of infantry with the velocity of cavalry, may be of particular advantage in the last two cases, especially in passing to the defensive and covering a retreat, in case of a failure in the enterprise.

§ 495. The principal conditions of success in all enterprises of this kind may be stated to be: 1. Complete knowledge of the ground, and positive information as to the force and distribution of the enemy; 2. A concealed approach to the point on which the attack is to be made; 3. Rapidity of movement, seconded by the secrecy and unexpectedness of the attack; and, 4. To keep the movements of the different parties as closely united as possible until the last moment, so that no one of them

may be delayed by unexpected obstacles, or discovered by the enemy on account of having separated too soon; finally, the whole force must be perfectly ready for action at a moment's notice.

§ 496. In accomplishing a concealed approach to the point on which the attack is to be made, we will be assisted by selecting the time when the enemy least expects an attack,—that is, in the night, or thick weather; by choosing the route affording the best cover; by announcing an enterprise of an entirely different nature; and, sometimes, by starting in the opposite direction, that after having made a considerable circuit we may finally come out in the real direction.

§ 497. Besides the general conditions specified, there are also particular conditions, relating to each of the cases specified in § 493, which are discussed in the following sections.

§ 498. Attacks upon the enemy's outposts are undertaken either to harass him, by obliging him to be in constant readiness for action, or to divert his attention, in order to cover some movement favorable to us.

In this and the other cases, we should endeavor to extend the alarm over the greatest possible space with the fewest possible men.

For this, it is advantageous to divide the party into several sections, which, attacking at several points, either simultaneously or successively, break through the chain, gallop up to the main guards, and, having alarmed them, at once fall back; if successful, they seize some vedettes or even pickets. In such an attack every section exerts itself to appear as strong as possible; they therefore scatter, and generally keep up a warm firing and great noise.

§ 499. Besides harassing the enemy, which is the direct object of these attacks, they may procure the advantage of making the enemy careless if they are frequently repeated, and thus facilitate the success of more important operations.

§ 500. In making an attack for the purpose of capturing a post of the enemy, it is well to divide the detachment detailed for the service into three parts: one moves to the rear of the post, on its road of retreat and reinforcement; another part makes the direct attack; the third is held in reserve to support the attack, or, in case of failure, cover the retreat of the other parts. If possible, it is well to conceal the reserve until the moment when the enemy is allured to pursue the repulsed party; then the reserve, acting as an ambuscade, endeavors to take the enemy in flank or in rear, and seize the abandoned post.

§ 501. If the post attacked is in a village, the place of assembly should be ascertained, and a party of men sent there to seize the enemy as they arrive singly upon the alarm.

§ 502. In general, in attacking a post with the design of taking possession of it, the greatest silence should be observed, and the firing com-

menced only when the attacking party has been already discovered; then rapidity and decision are necessary, so that the enemy may not have time to recover; rapidity and audacity in the attack usually command success.

§ 503. If the enemy retreats, then on the return march the reserve usually marches in front with the prisoners; the attacking party follows; the party which moved on the enemy's rear acts as a rear guard.

§ 504. If the ground permits, the attack may be combined with an ambuscade. For this purpose veteran troops are detailed, who are concealed with the object of falling suddenly upon the enemy when he has been decoyed to their position. In this case, success depends much upon the conduct of the troops who act openly, and who should endeavor to decoy the enemy into an imprudent pursuit, and draw him into the ambuscade.

§ 505. The success of the ambuscade itself depends chiefly upon seizing the proper moment for action. As a general rule, it should not begin to act too soon; lest the enemy retreat without loss. It is best to allow his leading parties to pass so far by that he may be attacked in flank, or, still better, in rear and his retreat cut off.

§ 506. Apart from the object of seizing important points, attacks are sometimes made upon the enemy's posts with the special object of encouraging the military spirit of our own troops, and increasing their boldness and self-confidence by partial successes.

In this case prudence requires progression in the undertakings; beginning with those that require small numbers and at the same time promise full success, such as capturing single vedettes; then, upon success, to undertake the capture of pickets, and finally to pass to more important enterprises. Inital successes in a campaign are of particular importance; they produce favorable impressions upon our own people, and depress the courage of the enemy.

If the enemy is at all negligent in guarding his horses, small parties may accomplish important results by stampeding them at night.

§ 507. The object of attacks upon the cantonments of the enemy may be to alarm him, to capture important points, or to profit by his dispersion and attack in force so as to defeat him in detail.

§ 508. In the first two cases the operations, although on a larger scale, will be nearly like those for attacking the outposts.

In the last case, when the detachment making the attack succeeds in carrying any important point, it should be at once supported by the cooperation of other troops. Thus, not being delayed by the first success, it can at once move on, and, taking advantage of the dispersion of the enemy, endeavor to capture his troops before they are assembled and ready for action, trusting to the troops in rear of it for a safe retreat.

§ 509. It is evident that the strength of detachments detailed for

sudden attacks must vary very much; to capture a vedette 3 or 4 men are enough,—the fewer the better. To capture a picket, and generally to attack the enemy's outposts, parties of our own advanced troops may be employed; to attack posts of importance, detachments of considerable strength may be sent out; while to attack the cantonments of the enemy, the whole of the main body is sometimes employed.

CHAPTER II.

OF RECONNOISSANCES.

§ 510. A reconnoissance—that is, an ocular examination—should precede every military enterprise. It is always necessary to know beforehand with what troops we have to deal, and the nature of the country in which the operation is to be effected; this information can be fully obtained neither by interrogation nor from maps; there is no other way than by a reconnoissance.

§ 511. Information obtained by a reconnoissance is preferable to that by interrogation, as being more full, and generally obtained with less delay.

§ 512. If the enemy is so near that our own chain can see every thing, the reconnoissance is made under its protection. In such a case the reconnoitring officer either takes no escort, or a very small one, and, for greater secrecy, leaves even that at some distance.

§ 513. If the enemy is at some distance, distant patrols are detailed for the reconnoissance; the duty is, according to its importance, intrusted either to the commander of the patrol or to a special officer (sometimes an officer of the staff) to whom the patrol is given as an escort.

§ 514. If it is necessary to make a close reconnoissance of the position and arrangements of the enemy, detachments of considerable strength must be employed. Their composition must be such that they can drive in the enemy's outposts, break through his lines to the required distance, and remain long enough to gain satisfactory information. Such reconnoissances made openly and in force are called *forced reconnoissances.* Their object is sometimes not only to examine the ground and the arrangements of the enemy, but also to ascertain his strength; consequently, to alarm him to such a degree as to make him show the parties at first concealed.

§ 515. To insure the success of a reconnoissance, whatever its object may be, it is necessary to attack suddenly and have a secure retreat.

§ 516. Small reconnoitring parties usually consist of cavalry alone; but if a certain effort is required to seize any point, or if we must leave it occupied while we pass beyond it, then artillery and infantry must be added. Here, as in all cases when it is necessary to combine rapidity of movement with some defensive strength, mounted rifles may be advantageously employed.

§ 517. The strength of a reconnoitring party can only be determined by its object and the obstacles it may be expected to encounter, not only from the greater or less force of the enemy, but from the nature of the ground, the distance of the place to be examined from our main body, the degree of security of the retreat, &c. If the affair consists merely in driving in an independent picket and holding its position long enough to make an examination, a strong patrol will be sufficient; but if it is necessary to examine a large portion of the enemy's position, or to ascertain his strength, a considerable force may be required. But every thing stated in this chapter relates more particularly to reconnoissances made with small detachments.

§ 518. Whatever may be the object of the reconnoissance and the composition of the detachment, the first thing is to determine the point from which the examination can be best made, and the principal effort must be directed to the occupation of this point. This effort should not be limited to a direct attack, but should be aided by several simultaneous attacks upon other points, in order to distract the attention of the enemy, divide his force, and throw him into irresolution. Such operations will be particularly useful if the object is to ascertain the strength of the enemy, for the partial attacks force him to show his whole force.

§ 519. Having occupied the point from which the reconnoissance is to be made, we should not be enticed into a pursuit of the beaten enemy, but proceed at once to strengthen ourselves in the position; that is, we should take measures for meeting the enemy with advantage when he returns to the attack: with this view, the safety of the flanks must be particularly attended to, to prevent the enemy from endangering the retreat of the detachment by turning the position.

§ 520. If the enemy makes a resolute attack before the reconnoissance is completed, the degree of defence must depend upon the importance of the object, that the sacrifice may be in proportion. A retreat commenced at the wrong time may encounter peculiar difficulty: to commence the retreat before the completion of the reconnoissance, is to abandon the work when nearly finished; remaining too long in position may expose us to useless loss. Therefore, if the object is to ascertain the strength of the enemy, the retreat should be commenced at once, because the enemy will soon recover from the first attack and gain the means of assuming the offensive.

§ 521. When a party has made a reconnoissance, its arrangements during the retreat present nothing unusual; it should carefully guard its flanks by strong parties or patrols, and always expect to be violently attacked.

§ 522. This is particularly to be anticipated when the object was to ascertain the strength of the enemy, and the retreat was commenced late. In such cases, prudence demands that we should place, beforehand, on the road of retreat, separate supports of sufficient strength to stop the pursuit and cover the retreat of the party.

§ 523. When the supports of the reconnoitring party are shown, and the enemy is near, it is prudent to have a considerable part, if not the whole, of the main body ready for action. For it may easily happen that the enemy, having been alarmed by the reconnoissance, and afterwards excited by its repulse and pursuit, may change his operations into a general attack, especially if he observes the slightest negligence on our part; in this case, all the advantage would be on his side.

Remark.—There are two kinds of reconnoissances: those to ascertain the general nature of the country, position and movements of the enemy, &c.; and those immediately preceding an action. The first should be made with extreme minuteness, and as much time given to them as possible; they may be well done by a man with but little genius and of a careful, business turn of mind. The second require the highest order of military genius, a rapid and unerring *coup-d'œil*, an accurate and instinctive knowledge of the tactics of all arms; they must be made with extreme rapidity, and acted upon at once.

There have been innumerable instances in military history, and not a few in our own, where, on the one hand, invaluable time and opportunity have been lost by the system of slow and minute reconnoissances in front of the enemy,—obtaining the horizontal curves of a field of battle; on the other hand, plunging headlong into action without a proper knowledge of the ground.

The important points are: the strength of the enemy, the key-points of his position, the nature of the ground between your own position and his; that is, is it passable, and for what arms? Let the subordinate commanders attend to minor obstacles. As soon as the proper information is obtained on these points, act. The mere moral effect of a rapid and unhesitating movement is very great. During the ordinary marches and intervals of rest, the cavalry and staff officers should collect every possible item of information; nothing is too trifling to be worth knowing; if they have done their duty properly, no general need hesitate more than a few minutes when he finds himself in presence of the enemy.

CHAPTER III.

OF CONVOYS.

ARTICLE 1.

The defence of convoys.

§ 524. The rules for escorting trains, and the arrangements for securing them against attack, were explained in Part I., Chapter I., Article 5; in the present article will be explained the manner of defending the convoy when attacked.

§ 525. The immediate defence of a very large train is, if not wholly impossible, at least very difficult; for it involves an injurious division of force.

§ 526. The following rules are laid down as the most important: to keep the force as much concentrated as possible, in order to act offensively, leaving with the wagons only the number of men absolutely necessary; if this is impossible, an effort should be made to keep the enemy away from the train as long as possible.

§ 527. In accordance with this, on the approach of the enemy, if the force of the escort is at all in proportion to that of the attacking party, it is best to move out to meet the enemy with the greater part of the escort, overthrow him, and clear the country in the direction of the march of the train. Even if the escort is much weaker than the enemy, it should move out to meet him, but must limit its subsequent operations to the defensive, endeavoring to keep the enemy away from the train long enough for it to gain a good defensive position.

§ 528. In the latter case, the train is, if possible, parked in square, or corralled. The escort, having kept off the enemy long enough to permit this, retreats upon the train; the defence, facilitated by the diminution of the space occupied, is now conducted in accordance with the general rules for the defence of the ground occupied, taking advantage of the obstacle presented by the wagons.

§ 529. If the attack is altogether by surprise, and is made on several points at once, so that it is impossible to collect all the wagons in one place, then each section of the train should be formed into a separate column, square, or corral.

§ 530. Any wagons loaded with powder or combustibles should be placed by themselves inside the square, or else formed into a separate park outside, placing them under cover of some defensible object.

§ 531. In these cases, it is very necessary to watch the movements of

the wagons, which should move to their places at such a gait as to render confusion impossible.

Remarks.—At the commencement of the expedition, the commander of the convoy should issue detailed instructions as to the manner of forming square or corral in case of attack. In square, the hind wheels of the wagons should be towards the exterior, the wagons should be fastened together by the lock-chains, and in all cases intervals should be left for the passage of the escort at proper points; these intervals should be closed by chevaux-de-frise, chains, &c.

The train is most readily corralled when moving in two columns by file and abreast. The leading wagons halt at a suitable distance apart, the others oblique outwards, each wagon moving to the front as soon as it clears the wagon next in front of it; each wagon then halts with its inner hind wheel close to the outer fore wheel of the wagon which preceded it in the column, and these wheels are chained together; any desirable shape may be given to the corral by throwing the pole of each successive wagon more or less inward.

§ 532. If there is a reasonable probability of saving the train by the operation, it is best to concentrate it in a favorable position, and await assistance; if the escort is altogether inferior in force, it may be best to save the train by a retreat.

§ 533. When the wagons are formed in column, square, or corral, their defence devolves upon the infantry portion of the escort; the cavalry, remaining outside the park, can only co-operate by endeavoring to take the enemy in flank, &c.

§ 534. The enemy may send out small detachments with the object of alarming the convoy and delaying its march by forcing it to halt and form. Such parties should be driven off by detachments from the escort, without assembling the train, which should be parked only when the enemy attacks decisively and in considerable force. Therefore patrols should be sent out as far as possible, to discover the approach of the enemy and ascertain his force betimes.

§ 535. Having repulsed the enemy, the escort must not be induced to pursue him too far from the wagons; it is only necessary to take measures to allow the train to pursue its march.

§ 536. If the convoy is attacked when halted, the defence is conducted as already prescribed; but in this case the defence is easier, because the wagons are already formed and the escort in position. Even here it is best to try to keep the enemy at a distance, or, if the forces are at all equal, to defeat him, and then return to the train.

§ 537. The selection of the positions for rests and camps will have a great influence upon the success of the defence of the convoy. In the selection, preference will be given to those places which are favorable to

the action of the troops composing the escort, or the greater part of it. For parking the train, places must be chosen at a distance from objects which would conceal the approach of the enemy, and enable him to hold a position dangerously near; on the other hand, it should be surrounded by objects preventing easy access, but not interfering with observation.

§ 538. At the park, the troops of the escort are posted as follows: the infantry and artillery bivouac inside the square; the first places its parties along the faces they are respectively detailed to defend, and posts guards and a chain of sentinels around the park; the guns are placed at the angles, and generally at the weakest points, or where it is easiest to sweep the ground in front.

The cavalry, bivouacked outside the park, places outposts and sends out patrols according to the rules for outpost service.

The draught-animals should be collected in the centre, so as not to interfere with the defence of the sides.

Article 2.

The attack of convoys.

§ 539. An attack upon a convoy may be intended either to capture it, to destroy it, or merely to alarm and delay it.

Independently of other considerations, the composition and force of the attacking party must depend upon the object in view.

§ 540. The general conditions for success in the attack of convoys are usually the same as for sudden attacks. The most favorable moment for attacking a convoy is when it is passing a defile, crossing hills, streams, &c.

§ 541. The main effort of the attack should be directed against the escort, especially if it is marching in one body, not only to occupy its attention, but also to separate it from the train if possible. At the same time, small parties should move upon different parts of the train, to prevent it from parking, carry it off, or destroy the wagons. A part of the troops must be held in reserve.

§ 542. If the train succeeds in parking, the operations against it become difficult for cavalry alone; in that case, the infantry and artillery must act.

§ 543. If the train or a part of it is captured, and it is possible to carry it off, the operations of the detachment change; it then escorts the wagons, as directed in Part I., Chapter I., Article 5, and acts as is laid down in the preceding article.

§ 544. When the attacking detachment is sent out merely to delay and annoy the convoy, it passes in advance of it, destroys the roads, ruins the crossings of streams, and alarms the convoy by partial attacks, particularly during the night and at well-known places.

CHAPTER IV.

OF FORAGING, AND ATTACKS UPON FORAGERS.

ARTICLE 1.

Of foraging.

§ 545. Under the head of foraging are included the operations of parties detailed to obtain not only forage, but supplies of all kinds.

§ 546. Foraging is effected sometimes where there is no danger from the enemy, sometimes in places where an attack may be expected, and, in cases of extreme necessity, sometimes in places actually occupied by the enemy. The manner of conducting the operation is somewhat different in the three cases.

Remark.—If the enemy is so near that an attack may be expected, the artillery send out no foragers, so as not to break up the detachments with the guns and interfere with their readiness for action. In such cases, if it is not possible to supply the batteries from the temporary magazines, their foraging is imposed upon the cavalry.

§ 547. Foraging out of all danger from the enemy is effected as follows: a space for foraging is assigned to each party of the troops, and, if it is expected to remain some time in the same position, the villages are occupied by safeguards sent by the party in whose ground each falls. The foraging is commenced at the places nearest the enemy, falling back, as he approaches, to those immediately in our front, and finally to those in rear.

§ 548. For foraging, parties of men, with the proper number of officers, are detailed, and the necessary wagons sent with them; if the forage is to be packed on the troop horses, this is done as shown in figs. 11, 12. If the foraging is to be effected in villages, severe measures must be taken to prevent disorder and plundering on the part of the foragers.

§ 549. In this case, it is best not to take the party into the village, but to send for the chief persons and stipulate with them that the inhabitants shall bring the required forage and other stores out to the troops. If the inhabitants do not promptly comply with this moderate command, it is necessary to take the party in.

§ 550. In this event, all possible means must be taken to prevent disorder, as, for instance:

1. A certain number of houses are assigned to each company, so that the commander of the detachment may hold each company responsible for the disorders committed within its limits.

2. Guards are posted and patrols sent out, who arrest any foragers guilty of disorder.

3. If the form of the village permits, a part of the detachment remains at the centre to pack the horses and load the wagons as fast as the other men bring the forage from the houses.

§ 551. In places where an attack may be expected, the foraging is conducted as follows: Either fatigue parties are sent with wagons, or parties of cavalry with their own horses; in both cases a special escort is added for the protection of the foragers.

§ 552. In all cases, the strength of the escort depends upon the degree of danger, the space over which the foraging is to extend, and the distance from the enemy.

§ 553. During the march of foragers to and from the foraging-ground, if they consist of a fatigue party with wagons, an escort is added, which acts in conformity with the rules for escorting convoys.

Fig. 11.

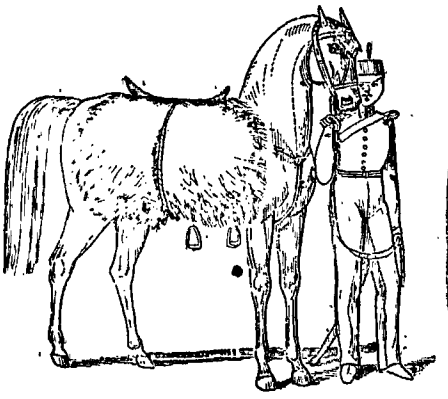
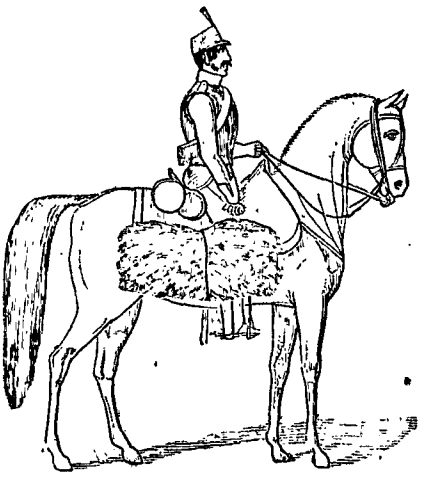


Fig. 12.



If the foragers consist only of cavalry with their own horses, then on the outward march, they move in one body, observing the precautions prescribed for movements near the enemy; on the return march, if the horses of the foragers are packed and led, the detachment acting as escort should not pack more than 40 pounds on their horses, so that the load may not prevent them from acting against the enemy.

Remarks.—Hay is packed as shown in figs. 11, 12.

One hundred and twelve pounds may be packed on a horse, as shown in fig. 11, and the horse must be led; 56 pounds are packed as shown in fig. 12, in two trusses.

§ 554. Sometimes the escort, or a part of it, may be sent out early to

the foraging-ground, to take measures for the security of the foragers before they arrive.

§ 555. For the safety of the foragers when at their work, the escort is divided into two or three parts, according to circumstances: one part places a chain of outposts and sends out patrols, to guard the whole ground; another furnishes the supports of the outposts, and if there are infantry or mounted rifles with it they occupy the points which cover the approaches; the third part is placed in reserve near the centre of the ground, that it may easily reach any point attacked.

§ 556. If the enemy attacks while the foraging is going on, the escort should go to meet him or defend itself in position, endeavoring to stop him until the foragers have finished their work, and are drawn out on the road for their return march; then the escort commences its retreat, acting as a rear guard, and endeavoring to keep the enemy as far from the foragers as possible. If it is impossible to hold the enemy in check long enough to finish the work, they should at least send forward and protect all the foragers who have packed their horses or loaded their wagons; the rest join the escort. If there is a probability of driving off the enemy by uniting all the foragers to the escort, it is best to abandon the forage already packed, and to begin foraging anew after having repulsed the enemy. It is permitted to abandon the forage entirely only in extreme urgency, when there is absolutely no other way of saving the foragers.

§ 557. If the enemy is repulsed, we must not be induced to pursue him any farther than enough to prevent a renewal of the attack, but must endeavor to complete the foraging.

§ 558. The foraging must not be extended over any ground not guarded by the escort. If the escort is too weak to cover the whole space designated for foraging, the ground is divided into parts, and the foraging effected in the different portions successively.

§ 559. If the foragers are attacked on their return march, the defence is conducted as prescribed in the preceding chapter.

§ 560. If the foraging-ground is at a considerable distance from the camp, it will be a proper precaution to post a special detachment in support half-way.

§ 561. Foraging in places occupied by the enemy is undertaken only upon the entire exhaustion of the ground occupied by our own troops. Such foraging is covered by offensive operations, so that, having driven in the enemy's advanced troops or other parties, we may rapidly seize all the supplies to be found in the vicinity. This is called *forced foraging*.

§ 562. The strength and composition of a detachment for forced foraging must be such that it can overwhelm the enemy's troops, and remain long enough in position to enable the accompanying detachment of foragers to complete their work and retreat out of danger.

§ 563. The main conditions of success in such an enterprise are suddenness, rapidity, and determination in the attack, promptness in the work of the foragers, and tenacity in holding the positions taken from the enemy as long as necessary. Success will be greatly facilitated by partial attacks made upon different points of the enemy's position while the foraging is going on.

ARTICLE 2.

Of attacks upon foragers.

§ 564. Attacks upon foragers should be sudden and rapid, in order, by not giving the escort time to defend the points attacked, to produce confusion among the foragers and thus prevent them from working.

§ 565. The approach of the attacking party should be concealed, rapid, and compact; that is, it should not send out parties to any great distance in front or on the flanks, and, as a general rule, should not divide its force prematurely, but only the moment before the attack.

§ 566. The force of a detachment sent to attack foragers depends chiefly upon the object of the attack; that is, whether it is designed to capture the foragers, or only to prevent them from foraging by alarming them, or to prevent them from carrying off forage already packed.

§ 567. It is in all cases advantageous to begin with several simultaneous false attacks by small parties, to perplex the enemy and oblige him to divide the escort; then to direct the main party of the detachment upon the principal point of the enemy's arrangements, overthrow his weakened escort, and penetrate to the road of retreat, so as either to cut off and destroy a part of the escort and foragers, or to force them to abandon their work and fly, by threatening to cut them off.

§ 568. If from the disproportion of force it is impossible to prevent the foraging entirely, the attacking party confines itself to delaying the work: its operations, therefore, should consist in partial attacks upon several points, in order to alarm and disperse the foragers by breaking through the outposts at several points. Upon meeting a considerable force of the enemy, these attacking parties should at once retreat, and renew the attack in a different place. In such operations a portion of the attacking detachment should be kept together and held in reserve, as a support and rallying-point for the small parties.

§ 569. If they do not succeed in preventing the foraging, they may try to attack the foragers on the return march; observing in this case the rules laid down in the preceding chapter for attacks upon convoys.

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